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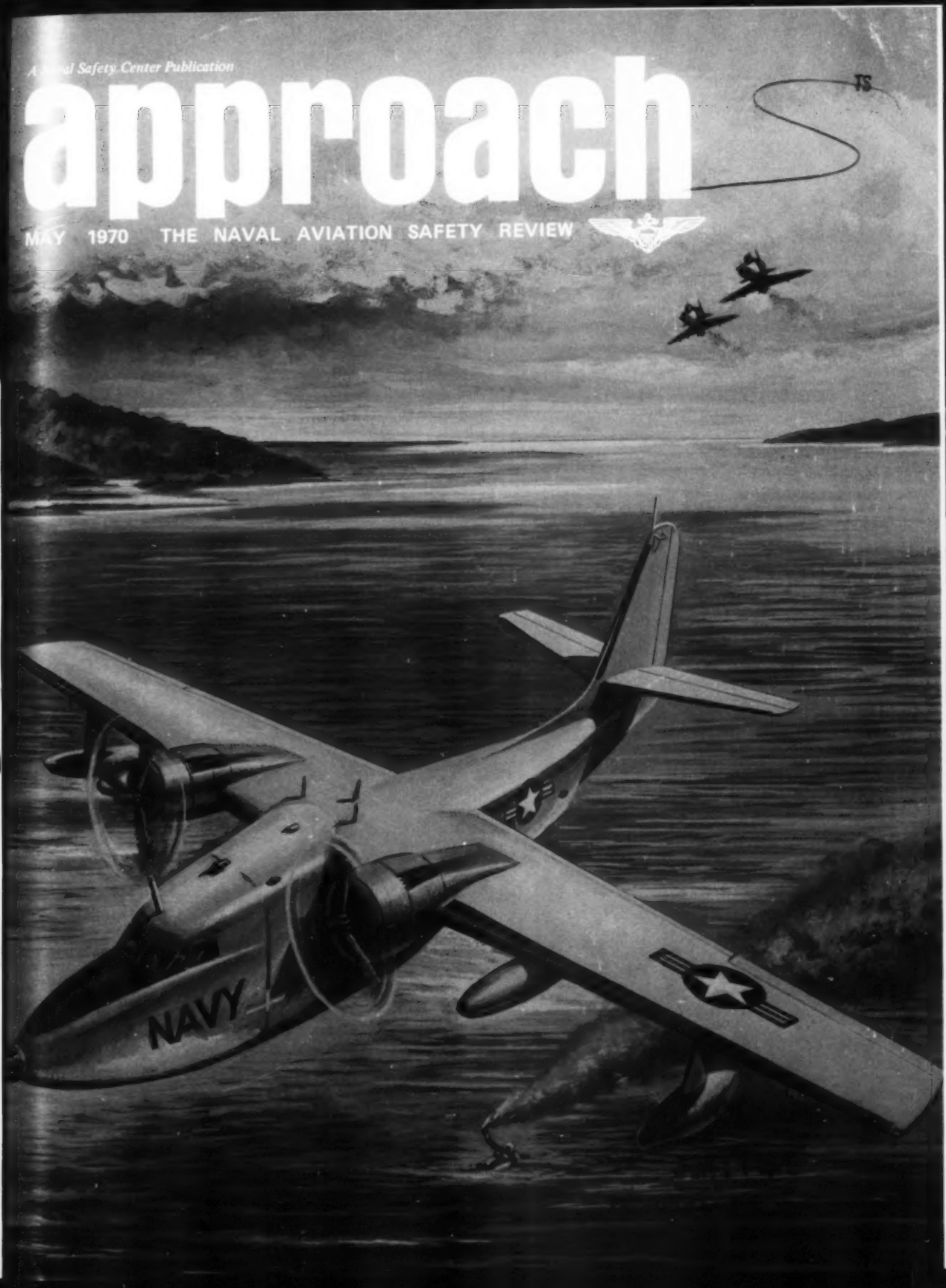
approach

MAY 1970 THE NAVAL AVIATION SAFETY REVIEW

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Nearly fifteen years ago, an article appeared in APPROACH magazine which received then and has continued to receive considerable attention throughout the entire aviation community. This particular material came into print as the result of information provided on a volunteer basis by the pilots involved. The fraternity of those who fly remains indebted to these aviators for their candid accounts which were given with the hope that others would benefit from their experiences. The aircraft involved are long since gone from the naval inventory, but aside from that, the message to be gleaned from the story is as realtime as today. – Ed.

. . . and then

By CDR R. P. Brewer, USN, (Ret.)

It was a "routine" flight by members of a reserve squadron – eight pilots were scheduled; seven got airborne; five continued the flight to its unscheduled conclusion; one was lost.

Concerning the five pilots, it is believed that their individual experience and backgrounds provide a fairly typical cross-section of reserve aviation. The list, which might well be repeated in any of a hundred similar activities, includes a manager of an electrical supply firm, the director of industrial relations for an oil refinery, a member of a construction company, an associate of a farmers' cooperative supply organization and the director of a local Chamber of Commerce.

Married, family men almost without exception, these reserve pilots drove or were flown to their base once each month to engage in three or four flights, logging an average of about 10 flight hours per month.

This is their story.

EIGHT reserve pilots were scheduled for a VFR cross-country navigation flight to provide cruise control training in F9F-7s prior to engaging in forthcoming maneuvers. Originally projected several months before, the flight received final approval and pilots were designated about 1030 one Saturday morning.

Because of the relatively short notice on which the flight was finally undertaken, the squadron found it necessary to obtain two replacement pilots from a local companion squadron. One of the replacements was designated flight leader because he had the necessary instrument qualification required to lead such flights.

Of the eight pilots scheduled, three had flown a hop previously during the day; only four had made cross-country flights in the F9F-7. As finally organized, the flight appeared something like this:

Number 1: (Flight leader) received checkout in F9F-7 two months before and had logged 10.7 hours in model.

Number 2: Checked out in model a year previously and had about 60 hours in model.

Number 3: Checked out in model the previous year and had about 30 hours in model.

Number 4: Checked out in model a year before; had about 29 hours in model.

Number 5: Checked out about two months before and had approximately 20 hours in model.

Number 6: Checked out a year before; had 20 hours in model.

Number 7: Checked out about three months before; had about five hours in model.

Number 8: Checked out a year before; had some 40 hours in model.

Distance of the flight was 555 miles over a route

there were none

which approached mountainous terrain near the destination. Weather briefing noted a tornado well to the southwest of the route and scattered thunderstorms predicted enroute. Time enroute was one hour and 30 minutes, with the flight to arrive over destination with an estimated 1840 pounds of fuel remaining.

Preflight planning was accomplished with most of the pilots working out their own flight plans and with the flight leader completing a briefing "as thorough as any flight I ever briefed."

Start, departure from the line and preliminary radio check was according to normal procedure. One aircraft was delayed on starting and was left at the line. The radio communications check proved difficult, with considerable shifting of frequencies required to establish a common tactical channel.

On reaching the end of the runway there was an initial delay of several minutes while a number of aircraft landed. Takeoff was at 1705. Joinup after takeoff was quickly accomplished and the leader then circled the field at a low altitude to check the status of the delayed aircraft, which failed to leave the line. Flight members figured that some 800 pounds of fuel had been expended during these delays.

Then There Were Seven

Departure and climb to 36,000 feet on a northwest course was uneventful, but approximately 110 miles out on course No. 5 and No. 6 men returned to base after reporting excessive fuel consumption. No. 7 then moved up into No. 5 position astern.

Then There Were Five

About 200 miles on course the flight encountered the first thunderstorm, an anvil head at about 32,000-34,000 feet, which they were able to drop under without difficulty. Thereafter several small thunderheads were flown over. Weather to the north and east of course appeared relatively clear.

About 250 miles out the canopy of No. 5, formerly No. 7, began icing over despite constant use of manual temperature control, and in a short time he was looking out "through a dollar-sized hole." In a few minutes, however, the icing abruptly disappeared.

A radio check netted a report that destination weather was a comfortable 15,000 feet scattered with thunderstorms to the southeast.

Noting what appeared to be a sizeable thunderstorm ahead, the flight began climbing to top it. At this time No. 5 began to lag behind. When the flight had attained 38,000-40,000 feet, and was nearing the thunderstorm, the flight leader advised he was reducing power to 87 percent to allow No. 5 to catch up. No. 5 gave a count for a DF steer from the planes ahead, which he could no longer see. On reduction of power by the leader, Nos. 3 and 4 overran and used their excess speed to pull up slightly higher than the rest of the flight.

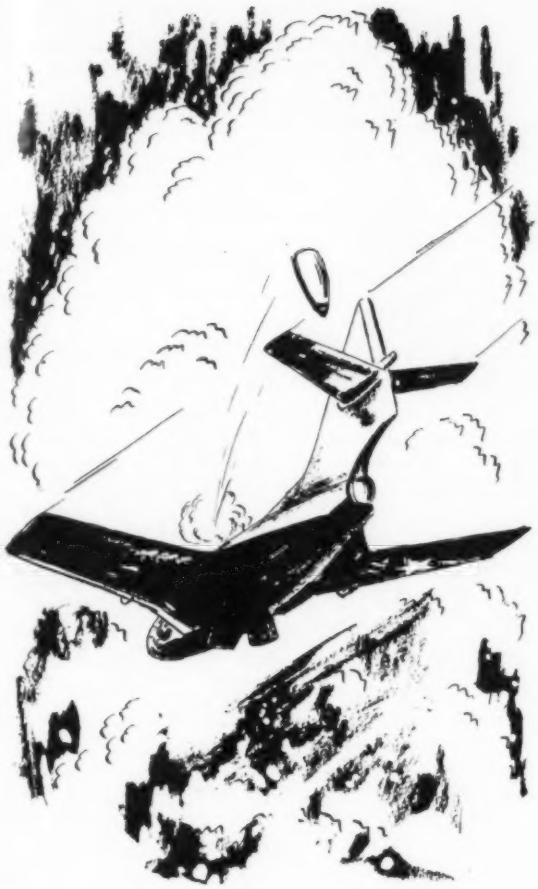
Now No. 3 called that he was encountering stall in his aircraft and No. 5 noted the same condition. At this time a pilot, possibly No. 3, suggested reversal of course, but No. 4, higher than the others, reported he could see over the top of the thunderstorm.

Just short of the thunderstorm the leader began a left turn which immediately aggravated the near-stall condition of the aircraft. Mushing considerably, the flight entered the cloud, No. 2 entering first, followed by No. 1. No. 4 held course and altitude. No. 3's actions from this point are not known, but possibly he elected to go down through the clouds. No. 5 attempted a 180-degree turn but stalled through the tops of the thunderhead at about 39,000 feet.

From this point, integrity of the flight disappeared as each of the remaining pilots found himself in a situation requiring a separate solution. Accounts of how each pilot attempted to solve his individual problem follow.

Lose Leaders

Completing his turn away from the cloud and circling in the clear at about 34,000-36,000, No. 1 began calling



the flight, but was unable to establish satisfactory communications. He then began a descent in the trough paralleling the near side of the cloud, throttle at idle, and leveled at 17,000 feet to go around the edge of the thunderhead and to resume base course.

It was then apparent that the 1500 pounds of fuel remaining would be insufficient to make destination, and No. 1 began looking for a place to land. Following a highway he descended to 5000 feet to select a stretch on which to set down. After dragging the road for obstructions he made an approach over a pickup truck and touched down, blowing a tire as brakes were applied. On landing runout he noted a slight hill over which he might expect to see a car come at any time, so he turned off the highway at a side road intersection to clear. A car immediately came over the hill to investigate the low flying airplane.

Driven into a nearby town the pilot obtained the services of a tractor and a hired hand to tow the plane into town. This was accomplished after a few mishaps involved in being towed off the pavement onto a soft shoulder.

Thereafter No. 1 was advised of the crash of another aircraft some 40 miles away and was driven to the scene to assist in its identification.

Then There Were Four

On entering the cloud, No. 2 elected to descend through what he assumed to be only a layer, to bust out under and remain contact to go on to destination. He extended speed brakes, reduced throttle and began a 5000-6000 fpm rate of descent, holding base course. The descent was considerably prolonged. He first encountered lightning and then severe turbulence, and meanwhile he attempted to hold a nose-down attitude to prevent stalling.

After the first period of turbulence, No. 2 became concerned about his altitude with reference to surrounding terrain, believing that below 15,000 feet he would be dangerously near to the mountains ahead. He turned north, got into more violent turbulence, lost control of the airplane a couple of times and at 15,000 feet decided to eject. Still in the turbulence, still in a dive, he jettisoned his canopy (he lost his helmet but does not recall when this occurred) and, releasing the controls, pulled the curtain. Nothing happened, but he had been told that he might reasonably expect a two or three-second delay in the firing of the seat, so he was not particularly upset over the delay.

Curtain over his chin, he waited – then decided to peek around the curtain to see if he was still in the airplane. He was. He released the curtain, waited, still diving, considered re-safetying the curtain, discarded the idea and went back to driving the airplane.

While considering his next move he saw the ground materializing below to show that he still had safe altitude. Breaking out beneath the clouds at about 5500 feet he retracted speed brakes and took up an easterly heading, unable to get much speed because of the absence of the canopy. After searching for a time for a place to land, he selected a stretch of highway near a town. He was down to 500 pounds of fuel now. Checking the wind by referring to the smoke from the local trash dump he made an approach over an automobile at about 150 feet, leveled at 10 feet, cut the throttle and landed. Slowing to taxi, he folded the wings to cross a bridge and continued into town where he turned off to park on a side street.

After his report was received, arrangements were made for a nearby air station to send a crew with another canopy, fuel, a starter unit and to disarm the hot seat. Faced with the problem of what to do with the seat cartridge, the pilot considered throwing it into a lake or burying it. He finally obtained a shotgun from a

patrolman and shot the side of the shell open, rupturing it so the powder could be removed. The shell case was turned over to investigating personnel for further check.

When the airplane was ready for flight, it was pushed by local citizens back to the highway, which was blocked off. A clear stretch of road about a mile in length was then available before the highway crossed a low bridge. Thereafter, another mile of open highway was usable. There was no fuel in the wing tanks; elevation of the "field" was 2200 feet.

The airplane was almost airborne at the first bridge and, in accordance with his preplanning, the pilot was able to lift the plane up on its oleos to clear the bridge safely. Thereafter he was airborne on the second stretch of "runway."

"After I got off," said the pilot, "I came back and made a pass by the town to do a roll of appreciation for their help."

Then There Were Three

Because No. 3 was not observed from the time the flight entered the cloud top, nor were any radio transmissions heard, his actions may only be guessed. The airplane crashed some 40 miles away from where No. 1 landed. The plane hit in a near-vertical angle on the corner of a cement foundation of a farm structure, digging a large hole and being demolished by the impact.

After the initial inspection the investigating party concluded that the ejection seat was not in the wreckage. Shortly thereafter, because of the inconvenience caused the property owner by the crowds of spectators and souvenir hunters attracted to the scene, it was decided to bulldoze the wreckage into the hole and to cover it up. The pilot was later found, dead of injuries which possibly resulted from hitting some part of the plane on bailout. Questions then raised concerning the absence of the ejection seat prompted re-opening of the crash hole to re-examine the wreckage. Parts of the ejection seat were then found in the wreckage.

Then There Were Two

No. 4 man stated that from his position 1000-2000 feet above the rest of the flight, he could see over the top of the cloud, and recommended going over.

However, when the leader reduced power to allow No. 5 to catch up, No. 4 encountered stall and began to lose altitude. He increased power to 100 percent but still lost some 1000 feet more. A tentative turn with the rest of the flight increased the stall so he returned to base course and was in the cloud. He too, thought he would be able to penetrate quickly.

He reports that his fuel consumption appeared to have increased after entering the cloud and he decided to get down in order to have some fuel remaining for landing. At this time he had about 1500 pounds. Knowing that a range of mountains was directly ahead on course he turned to parallel the mountains and continued his descent at about 4000 fpm. He, too, encountered violent turbulence but the airplane handled very well and he never lost control. He attempted to raise FAA and Navy towers without success and then called "Mayday." His only answer was from an Air Force B-25 which gave him some idea of weather conditions beyond the storm area.

At 15,000 feet he heard No. 2 call he was in the clear. At 12,000 feet the fuel warning light came on (he had not retarded throttle during his descent). At 11,000 feet he broke out beneath the thunderstorm and turned to intercept his original base course. After attempting to locate himself by landmarks and getting down to 700 pounds of fuel remaining he circled a reservoir with the intention of a water ditching.

Noting the length of the reservoir dam, about 9300 feet, and its width, some 25 feet, he elected to try and land on the dam itself. To one side, the water level was about 15 feet below the top of the dam. On the other side was a drop of about 250 feet. A guard rail, about three feet high ran along either edge of the dam.

On touchdown, he avoided use of brakes and, flaps clattering on the tops of the guardrail pipes, completed the rollout and added power to taxi off the far end of the dam. After taxiing down to some buildings he was met by an irate reclamation official who advised him that, "Son, you're in trouble! You can't go landing on government property like this!"

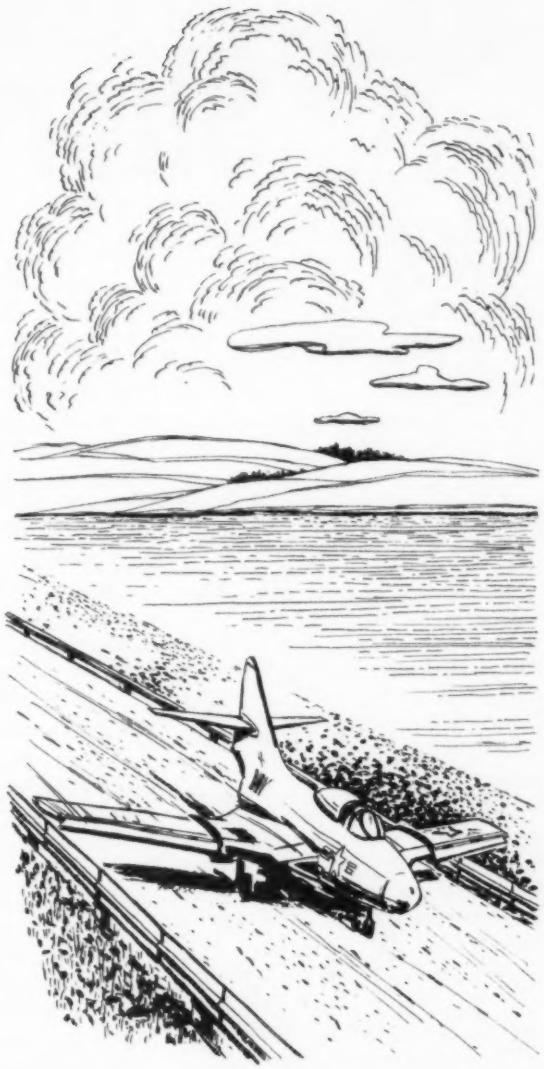
Shortly thereafter, arrangements were made to report the landing and remove the airplane.

Then There Was One

At the time the formation approached the cloud, No. 5 was at about 39,000 feet at about 170 knots, stalling through the cloud tops. While trying to do a 180, he stalled and mushed into the clouds. In attempting to fly out of the clouds on instruments, he also hit violent turbulence, was flipped on his back and found himself in other unusual attitudes.

At times he was gaining 6000 fpm and at other times he was descending 4000 fpm. He came out below the clouds at 17,000 feet in a slight nosedown turn, but low airspeed brought on a stall. He nosed over to pick up speed and lost altitude down to 6000 feet. He then climbed back to 15,000 feet, having about 1900 pounds of fuel left.

After taking up an easterly course away from the storm area he was still unable to establish his position; spotting



an abandoned airstrip and with only 700 pounds of fuel remaining, he elected to land. The strip was about 5800 feet long and landing was without incident. No. 5 then "took a chance and started walking." He was later informed that he was quite fortunate in his choice of direction, for had he taken the opposite direction he would have found no houses, just a long stretch of open country.

He found a house and was able to report his landing and arrange for fuel to be brought to the airstrip. Then, he reports, "I got my biggest shock when I saw a spectator smoking near the airplane as it was being fueled!" The plane was returned to base.

Yea Verily . . . And Then There Were None.

Short Snorts

Check-Off Chart For The UR Program

THE Commanding Officer, Naval Air Technical Services Facility, 700 Robbins Avenue, Philadelphia, Pa. 19111 has developed a large (22 inch x 30 inch) NAVAIR Form 10370/5 Check-Off Chart designed to help maintenance personnel provide better inputs when filling out Unsatisfactory Material/Condition Report forms.

The Check-Off Chart is quite large and detailed and its size precludes reprinting here. It takes each numbered box of the UR form and explains the type information it requires. The importance of accurate and complete information on UR forms can not be overemphasized and this Check-Off Chart should help all maintenance personnel to improve the quality of reporting.

Copies of the Check-Off Chart for preparation of UR forms are available for the asking by all reporting activities. This extra-sized chart can be posted in appropriate offices and spaces for ready reference and the Commander, Naval Safety Center recommends its use.

Requests for the Check-Off Chart should be made direct to the Commanding Officer (Attn: Code MRMP) of NATSF.

HI!

APPROACH/CENTER CONTROLLERS will soon be saying "Hi" to the pilots of military aircraft when approach clearances are issued. This is not a greeting, but a way of telling the pilot to use HIGH altitude approach procedures.

Confusion has resulted and incidents have occurred where a location has both high and low procedures with the same name; e.g., Patuxent River NAS TACAN RWY 6 procedures.

Because of this, the TERPs (Chapter 1, Section 6) will soon be revised to specify use of the prefix HI for high altitude procedures. The published procedures will be revised as soon as practicable.

Controllers should continue to follow the 7100.8 – 545/7110.9 – 375 procedures and specify ". . . the name of the approach as published on the approach chart." Appropriate examples will be added to these sections in future handbook revisions (AT-300).

FAA Air Traffic Service Bulletin

Hazardous Knife Edge

DURING A PREFLIGHT inspection of an E-2A, the pilot grabbed the aft end of the port outboard main landing gear door to check for looseness. Unknown to the pilot, the edge of the door had been honed to almost razor sharpness by the rubbing action (vibration) of the door against the wheel well frame (when doors were in the closed position). As a result, the pilot received a deep cut of the middle finger of his right hand even though he was wearing nomex gloves.

The reporting command recommended that all activities operating E-2/C-2 series aircraft initiate periodic inspections of the trailing edges of the landing gear doors and file down any edges found to be sharp.

Slightly Under Par!

EIGHTEEN birdies! To a golfer that's heaven, or at least a very pleasant dream. To a pilot in a P-3B it wasn't heaven; it was almost a nightmare. The aircraft was on an approach to an Alaskan air station after a long navigation training flight. The weather was sour – surface wind was 120 degrees, 25 to 30 knots, ceiling 900 feet, visibility 4 miles in rain – and the pilot was shooting a GCA to runway 25. The aircraft broke out at two miles on final at which time the pilot received word that surface winds were 120 degrees, 40 knots gusting to 50. (Far too much crosswind for landing on runway 25.) So the pilot, who was familiar with the area's terrain and obstructions, took a waveoff and made a visual approach to runway 10, staying below the cloud deck all

the way around the pattern. As the aircraft reached the 90 degree position the pilot saw a flock of sea gulls lift off the runway and disappear behind a knoll. As he continued his approach, and was just before touchdown, the flock of birds flew back into his path, striking the plane from below and the left. After touchdown the radioman reported he had seen one bird ingested by No. 2 engine. While he was reporting this, the pilot noted TIT (turbine inlet temperature) on No. 2 and No. 3 engines start to rise. Both these engines were feathered on the runway by using the "E" handle. Postflight inspection revealed that a total of 18 sea gulls had struck the plane. That's one more for the birds.

Starboard Engine Is On Fire

"ATTENTION all aircraft in the vicinity of NAS remain well clear; an emergency is in progress," the tower broadcast simultaneously on tower frequency and Guard channel. This was followed on tower frequency by further instructions – "All aircraft in the bounce pattern clear the area, an aircraft with an engine fire is six miles west, inbound to NAS, descending from 3000 feet."

As soon as the tower controller finished this transmission one aircraft called in. "NAS tower, Impatient 42, ready for immediate takeoff. I'd like to get out before that emergency arrives." Another called in, "NAS Tower, Lucky 12, turning final, three in the green, request permission to land." The tower quickly replied, "Impatient 42, hold; repeat hold. Break. Lucky 12, take a waveoff. You are not cleared to land. Depart to the east." (When an emergency is in progress, other aircraft are to remain quiet. Operations on the field get sticky with emergency vehicles beginning to move into position and that is *not* the time to request takeoffs or landings.)

Meanwhile the plane with the emergency continued inbound. Since the pilot had listened carefully to tower advisories he knew he was going to have a reasonably good shot at a straight in on the duty runway – runway 10. He transmitted, "NAS tower, my fire is out and the starboard engine is feathered but my gear indicates unsafe – the nosewheel indicates UP. Request permission to orbit the field, left hand pattern, while we work this out." Tower granted permission.

After the emergency aircraft passed overhead, NAS tower cleared Impatient 42 for takeoff with a straight ahead climb to 3000 feet and also relayed the latest information on the emergency aircraft to the crash vehicles, squadron personnel concerned and appropriate station personnel. The crew in the crippled plane were busy. They had seen hydraulic fluid streaming from the starboard nacelle after the gear had been activated. Fluid was added, the gear recycled and this time all three indicated down and locked both visually and electrically. The hydraulic system was put in BYPASS and the leak stopped. The pilot was cleared to land but his hydraulic pressure dropped to zero on the downwind leg. However, the approach was continued, his crew added fluid again on final and the pilot landed just past the numbers. He used aerodynamic braking as long as possible after touchdown and then used his brakes to stop on the runway. After he cut his good engine, squadron personnel inserted gear pins and towed the aircraft to the line.

Investigation of the feathered engine failed to reveal any reason for the suspected engine fire. A remote possibility exists that in some way the hydraulic leak in the nacelle caused smoke. (There had not been any fire warning indication.) However, it didn't take long to determine the reason for the hydraulic leak. The rubber o-ring on the pressure line fitting of the starboard engine driven hydraulic pump had failed. It had been crimped during installation. No record could be found of work being performed on that part of the engine or the hydraulic pump. This was a clear cut case of improper maintenance work and since it could not be determined whether squadron or IMA (Intermediate Maintenance Activity) personnel had done the job, all hands were briefed and cautioned concerning quality maintenance practices.

The aircraft commander had been told that the starboard engine was on fire when smoke was seen emanating from the engine accessory section. Checklists were quickly executed and performance of the entire crew in handling the double emergency was faultless. (What pilot would sit idly by "to see what will happen" when his crew tells him there is a fire in an engine?) This is another example – not too frequently publicized – of real professionals at work. ◄

Positive Outlook

Sunshine is delicious, rain is refeshing, wind braces us up, snow is exhilarating; there is really no such thing as bad weather, only different kinds of good weather.

John Ruskin

STRES

STRESS has been called the wear and tear of life. This is due to the fact that all our emotions and physical actions involve some degree of stress. However, stress is often not as important as its side effects.

Actually a little stress is not a bad thing. Slight tension produced by stress, as evidenced by mild anxiety, generally causes us to be more alert and cautious, and moderate stress can often improve performance. It is *excessive* stress that's disruptive and can cause personal problems.

Since a certain amount of stress in life is inevitable, do we just accept it and write the whole thing off? Authorities on the subject believe there *is* something we can do to keep from coming unglued. Knowing our own limitations can help prevent the effects of excessive stress. We can be that much ahead of the game by not permitting emotion to reduce our capacity for coping with problems.

Nature furnished *homo sapiens,* Mk-1 Mod O, with a system to mobilize his forces for his own defense. For instance, if one of our prehistoric ancestors spotted a saber-toothed tiger on the prowl outside his cave, fear would cause hormones to speed through his body, his heart would begin to beat rapidly, the muscles of his stomach and intestines would contract and his breathing would speed up. All this would prepare him to face the emergency.

Saber-toothed tigers are extinct now but we all still incorporate nature's mobilization system to meet stress. This is great when you have a real survival situation such as in-country evasion to deal with. The trouble is that the same system goes into effect when danger is merely anticipated or just imagined. A state of continuous response to a non-specific threat can result in what psychologists call "free-floating anxiety." Prolonged emotional stress – persistent fear, anger, frustration, apprehension, worry and anxiety – all keep your body on a constant alert, so to speak. If this emotional stress is repeated or if it is continuous, doctors say it can actually alter physical processes and may cause incapacitation.

Categories of Stress

Psychologists classify sources of stress-provoked anxiety into three categories:[1]

- *Environmental stress* – Environmental stresses are often the most obvious. These include fatigue from prolonged work, temperature extremes, pain from physical injury and physical discomfort from sensations such as hunger and thirst. Mental sources of environmental stress include family and career worries. In addition, as we all know, the pilot in the cockpit can experience frustrating experiences with delays, weather, traffic, etc.

- *Stresses from personal inadequacies* – When a person is aware that his difficulties or failures are the result of his own deficiencies, he becomes disturbed and emotionally involved. This is a more upsetting type of stress than that which stems from environment – it's more personal. An example of this category of stress is the plight of a

[1] Bond, Bryan, Rigney and Warren: Aviation Psychology, University of Southern California: 1968, p. 9-6.

student aviator who is having trouble with the program.

• *Motivational conflicts* – This third type of stress situation is the most disturbing of all. For example, you want two incompatible goals or you're faced with a choice of two alternatives, both unpleasant. This is the proverbial "devil and the deep blue sea" situation and can result in indecision, uncertainty and intense emotional distress.

Stress reactions in all three categories can distract attention and reduce standards of performance. The more stressed an individual is, the more likely he is to take short-cuts. An example of this is a pilot who, stressed by a rapidly changing landing situation, omits the landing checklist or skips an item on it and makes a wheels-up landing.

Ways to Handle Tension

Here are some ways to handle tension, keep stress reactions to a minimum and weather the rough spots of life a bit more smoothly:[2]

• *Balance work with play.* Even if you are aboard ship, find some time for recreation – a game of acey-deucy, a couple of chapters in your science fiction novel, an hour or so with your tape recorder or even just a short joke-swapping session with friends.

• *Take the job at hand and concentrate on it, then go on to the next one.* Don't indulge in purposeless worry about everything that has to be done later. Planning is one thing – stewing is another.

• *Work off tensions with physical exercise.* Exercise is a great way to let off steam and calm down. Running in place will do it if no other facilities are available or space is at a premium.

• *Keep physically fit and get enough sleep.* Just as the mind affects the body's working order, physical condition affects a person's outlook on life. Scientific studies indicate that cumulative sleep loss contributes to nervousness and psychosomatic illness. (Although most people have an occasional restless night, chronic inability to sleep should be discussed with your flight surgeon.)

• *Talk out your troubles.* Sometimes it helps to discuss your difficulties with someone who can be objective – your flight surgeon, chaplain or a trusted friend.

• *Learn to accept what you cannot change.* Don't try to make your family or friends over to suit your own ideals and then feel frustrated when this can't be done. In a similar vein, be kind to yourself, too. Nobody expects you to excel in everything. Others can do things you can't do and you can do things others can't. Setting reasonable personal goals reduces frustration. And, finally, though it's far easier said than done, there's no use getting upset about circumstances beyond your control.

Maturity

The mature person faces stress by controlling his anxieties and is able to direct his efforts effectively. He can choose among conflicting goals and relinquish those which are not attainable without extreme discomfort. When the occasion calls for it, he is able to work hard and aggressively toward the achievement of satisfaction but, if necessary, he is capable of compromise. He is likely to understand his own motives and less likely to practice self-deception.[3]

The methods of handling tensions and preventing stress outlined here are general. A specific word should be added about coping with stress in the cockpit, and that word is *training.* Training builds confidence and confidence is an antidote for anxiety. Emergency procedures should be overlearned to the point where responses are correct even under the most stress-producing conditions. ◄

[2] Metropolitan Life Insurance Co.: Stress and Your Health, 1967.

[3] Aviation Psychology, p. 9-7.
(Please see also "Stress and Flying Safety," by Michael Brownley, Bioenvironmental Safety Newsletter 1-69.)

Don't let it happen to you!

THE legal profession has a saying that goes, 'The man who defends himself has a fool for a lawyer.' With a minor variation this might also be applied to any professional aviator who prescribes medicine for himself.

Prescribing should be done only by a qualified flight surgeon. He is *THE* professional for this purpose.

Unnecessary risks where your health is concerned could prove costly and have far-reaching consequences.

This collection of pills was found at an accident scene and for one pilot the price had been very high. Don't let it happen to you!

NORDO, and more

By Anymouse

MY RAN and I launched at 1930 for a night mission in the Tonkin Gulf. Both squadron and air wing doctrine called for a brief with our F-4 escort on the conduct of the flight and this had been done immediately prior to launch. Launch and rendezvous were normal in all respects. As we turned toward our IP and initiated a shift to our primary control frequency, I felt no more than average apprehension about the flight despite, (1) no moon, (2) no horizon, (3) a 4000-foot undercast which surrounded the entire area and (4) the blackest night I had ever seen.

We were in the process of switching frequencies when control of the radios suddenly shifted to the front cockpit, followed abruptly by a complete loss of all radios and navigation equipment. (The CNI package had failed.) The ICS worked well and while my RAN and I tried to bring our equipment back on the line, my vertical gyro suddenly twitched, rolled inverted and indicated its death with a large OFF flag. The standby gyro appeared good so I immediately concentrated on the problem of passing the lead to our escort and telling him of our radio failure. As it turned out he could see my hardhat illuminated by my flashlight but was unable to see my hand signals because of the distortion of the RA-5C canopy and the glare of the lights. Common sense and the fact that we were turning back toward my estimate of the ship's last position told him of our radio failure and mission abort; however, we were both trying to fly each other's wing. I could think of no other way to positively pass him the lead except by slowing and falling aft of him. As we passed through 200 knots and the *Vigilante* began to buffet he got the idea and accelerated to a comfortable 325 kias and I tried to settle down for a two-hour ordeal of night formation flying. Pilots in the A-5 community are not the most practiced formation pilots around and I felt that this would be the most difficult part of the flight. While my RAN attempted contact with his PRC-90 (it seemed to work but no one heard us), I checked my cockpit and noted that the fuel totalizer had failed and my standby gyro was now laying on its side. With an obvious failure of both gyros I really wanted to go to our bingo field on someone's wing but had no way to tell anyone about my difficulties. My RAN's gyro was operating and I determined that if I erected my standby gyro it would indicate accurately for approximately a minute before flopping over on its side. So far, so good, and although the situation was anything but comfortable, I was holding a good wing on my escort and felt confident about getting the plane back aboard.

The next hour and one-half passed uneventfully except for the fact that my escort flew a constant left orbit and as a result I acquired a most impressive case of vertigo once we started down. We penetrated the overcast at 6000 feet and appeared to level off at 4000 feet, immediately below the clouds. The lead slowed to 220 knots and gave me a flashlight signal for gear and flaps. I lowered the gear and flaps at the same time he did but due to the difference in actuation time between dissimilar aircraft I overran badly and lost sight of the F-4 completely. I pulled up and away to keep from hitting him and suddenly found myself back in the clouds. My RAN kept my wings level by advising me of his gyro indications and I began a slow descent to VFR conditions. As we broke out I caught sight of our F-4 escort immediately below me and had to again pull up sharply to avoid hitting him, once more going into the clouds. I then descended and found the escort on my starboard side. I shifted over and continued my approach on his wing. The F-4 pilot knew his business and never let airspeed fall below 150 kias. I visually acquired the ship at about one mile, engaged the APC and settled down to the job of getting aboard. My RAN and I knew that if we didn't trap we might well have to leave the aircraft. The LSO acknowledged my NORDO pass with the standard three second "cut" light which completely obliterated the meatball. When the cut lights went off, the meatball was no longer on the mirror and my problems really began. Several flashing cut lights followed immediately by a waveoff confirmed my feeling that I was extremely low. As we departed the ship I erected the standby gyro and found my F-4 one-half mile ahead of me and waiting to pick me up. I found that it was far more comfortable for me to fall in behind the F-4 and use his wing lights as a vertical reference than to come up on his wing. My RAN constantly called altitude and wing position to me and as we turned in toward the final bearing I moved up on the F-4's starboard wing and found the ship directly ahead. I

picked up the ball and engaged APC once again only to find that the APC didn't work. I was all ready for the loss of the meatball when the "cut" lights came on and although the *Vigilante* leaves something to be desired in the manual mode on a black night, we came aboard with no further problems. In retrospect, this is probably because the plane sensed that we would part company if *it* allowed one more thing to fail.

I understand that all hairy tales have a moral and this moral has to be the importance of the brief. We had covered NORDO procedures in our brief and both crews had gone over speeds and signals as a part of these procedures. As a result, I always knew exactly what the F-4 would do and that he would be waiting for me if I didn't get aboard on my first pass.

Night formation flying with dissimilar aircraft presents unique hazards which may be overcome, in part, through a comprehensive rehearsal of procedures prior to flight. Had this not been done the Navy might well have lost the use of a *Vigilante*.

The moral which you point out is very appropriate: always insure that all elements of a flight receive a thorough preflight briefing, especially on handling emergencies. Your story brings up another good point: wherever possible, avoid formation flying in dissimilar aircraft, especially in poor weather conditions.

It seems that congratulations are in order on a difficult job well done because even though you and your escort were in and out of the clouds and had lost sight of each other several times (and you were having gyro difficulties) you pursued a solution as well as you could and saved the day. Finally, this incident illustrates very well just how much the pilot depends upon the men on the ground who repair, maintain and service his aircraft to ready it for flight. Most of the time the loss of a radio is a matter which is easily overcome but there are times when it can be critical. In reality, there is no such thing as a minor discrepancy because the only thing a minor aircraft discrepancy needs to become a major discrepancy is the right set of circumstances. – Ed.

'The Hairiest One Yet!'

I TOOK OFF from NAS Eastcoast in an A-4 bound for NAS Midwest. My preflight planning had been detailed and complete but, while I was enroute, my destination weather dropped to 300 feet overcast and one mile visibility. No sweat, I thought; my alternate was reporting 9000 feet overcast and seven miles visibility.

Center turned me over to Approach Control as I approached my destination. I advised the controller that I would make one GCA approach and if problems were encountered, I would proceed direct to my alternate. My flight plan was already worked out (and memorized) but the controller was not ready to copy. He advised me that he would copy my proposed flight plan during my turn to final.

In the meantime, he cleared me to 2500 feet, to penetrate on an outbound heading, followed by a long turn to final. When I was established in the penetration turn, the controller advised me that he was ready to copy my flight plan. I gave it to him and as I finished, my eyes focused on the altimeter. It read 550 feet – and descending! Because of some unknown factor (fatigue, the end of a 13-hour day or whatever) I had completely eliminated the altimeter from my scan.

I made a rapid and successful recovery from this very bad situation and the remainder of the hop was without incident. I landed at destination after an exceedingly smooth GCA.

This incident made a believer out of me regarding the necessity for thinking about a good scan and the hazards of adding to the cockpit workload at critical times such as a night IFR approach at the end of a long day. I have 3000 hours behind me but this incident is the hairiest one yet.

Instrument Mouse

This was a close one, indeed. It's hard to label the exact cause of why this pilot's scan went to pot. It could have been boredom, fatigue, preoccupation . . . or whatever. The important lesson here seems to be that we must work continuously to stay alert and ahead of our aircraft at all times. Virtually nothing is more important than keeping up a good scan during an instrument approach.

ANYMOUSE

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. As the name indicates these reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

— REPORT AN INCIDENT, PREVENT AN ACCIDENT —

Where Is Everybody?

SEVERAL aircraft commanders, including yours truly, have observed that when transiting NAS Westcoast only one man was available on the line to meet and dispatch transient aircraft. This procedure requires too much of one man and actually constitutes a hazard to safe and efficient operating procedures.

Aircraft should be met by a sufficient number of personnel to direct and park the aircraft and position the loading ramp. On departure, plane directors and ground handling crews should be available for clearing the area, assisting during engine starts, removing gear pins and ramp chocks, detaching the starter unit and rolling away the boarding ramp. Obviously this is too much to ask of one man! It could lead to a serious ground accident and at best is an inefficient mode of operation for four-engine aircraft.

Transport Mouse

To borrow a phrase from Grampa Pettibone, "Great horned hooty owls!" It is hoped that you gents have taken the time to talk to the operations officer about this. Chances are he doesn't even know the dangers that you are being subjected to at this fine naval air station. Squeak up!

Wrong Frequency

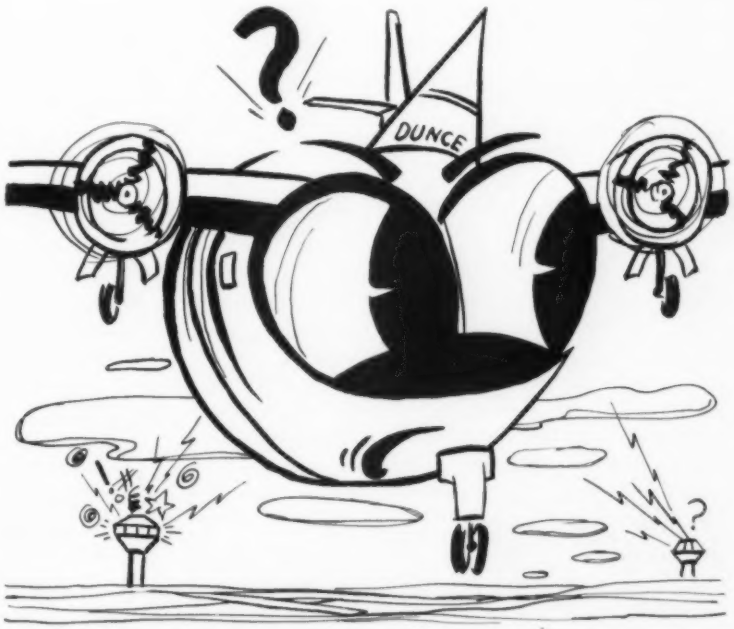
I FILED a VFR flight plan to an MCAS from NAS Eastcoast and monitored ground control during taxi and engine runup. I told my copilot to switch to *button one.* He misunderstood me and shifted to *button four.* Since the position of the UHF in the S-2 is less than ideal I did not verify the channel. After twice calling for clearance to takeoff, I received a clearance from the local *Municipal* tower, "345 cleared for takeoff." After takeoff I twice requested a right turn out and finally NAS tower came up on Guard and, in rather frigid tones, told me what frequency I was on and that tower personnel at Municipal weren't exactly happy.

I know I was at fault for not double checking the frequency and for not realizing that the tower I heard was Municipal, and not Navy, but why didn't the Navy tower come up on Guard when I took the duty runway and why did Municipal clear a plane for takeoff that they couldn't see at their airport?

Meek Mouse

As the artist of one of the comic strips frequently says, "Whooo, boy!" Unfortunately the time between the event and the time of receipt of your Anymouse exceeded the length of time tower tapes and records are maintained. However, here's the way our "gumshoe" puts the pieces together. As you acknowledged, the trouble all started in the cockpit when channel four was selected. The possibility also exists that your call to Navy Eastcoast did not include the word "Navy." It does appear that Eastcoast tower (Municipal) operator did clear you for takeoff in the belief that you were the aircraft waiting off the end of his runway. The NAS controller did see you take the duty runway but in view of no conflicting traffic, permitted you to continue takeoff while contacting the Municipal tower controller. By this time all hands were aware that something was amiss (including yourself). There was no conflicting traffic but when you started to turn towards Municipal Airport, the NAS controller decided now was the time to call you on guard. So ends our "gumshoe" report.

Everyone involved in this incident should be embarrassed for contributing his link to this weak chain of events. Much has been learned by all hands from this incident. ◄



Frequency Discipline

By J. E. Berta
FAA Liaison Officer
Naval Safety Center

HOW many times have you been frustrated when trying to contact ATC for either a change in clearance or to obtain some form of advisory information? Was it because some "clown" had the frequency tied up with a long-winded transmission, or the controller was too busy to answer, or were you actually on the wrong frequency and had to be advised to shift to the right one? There are several things that can be done to help yourself out of this dilemma along with helping other pilots and at the same time assist the air traffic controller in doing a better job. This in turn may help make your flight more effective and enjoyable. What can be done in this regard? Very simply it's called "frequency discipline."

The steady and significant increase in air traffic is being accompanied by an associated increase in voice communication between controllers and pilots. Most ATC frequencies are simplex, meaning that both the facility and the pilot transmit and receive on the same frequency. This has often been referred to as a "party-line telephone." Simply stated, when one party is transmitting on a frequency, it cannot be used by anyone else.

Excessive and unnecessary transmissions by pilots interfere not only with normal operational routine but also create hazards by potentially blocking emergency transmissions from the facility or other pilots. This can be particularly critical at radar locations where radar vectors are provided to separate and sequence aircraft and vectoring airspace is limited. In any case, unnecessary use of a frequency is just not good operating practice and is a disservice to other pilots as well as to the ATC facility.

ATC is constantly reviewing means for reducing and refining phraseologies and transmissions. Much has been accomplished in cooperation with the aviation community. For example, position reports have been virtually eliminated when aircraft are under radar control; standard instrument departures and standard instrument arrival procedures have been developed at many locations. Although these and other actions have significantly reduced frequency congestion, much more can be accomplished if pilots using ATC frequencies will recognize and act on factors under their control.

Recommendations For Pilots:

1. Be aware of the need for frequency discipline.

2. Be aware of and tuned to the proper frequency to use for the specific ATC function being provided.

3. Listen before talking. There could be emergency transmissions on the frequency you intend to use.

4. Say what needs to be said in conducting or planning your flight only to the extent that it is clear to both you and the controller as to what you want or need to do.

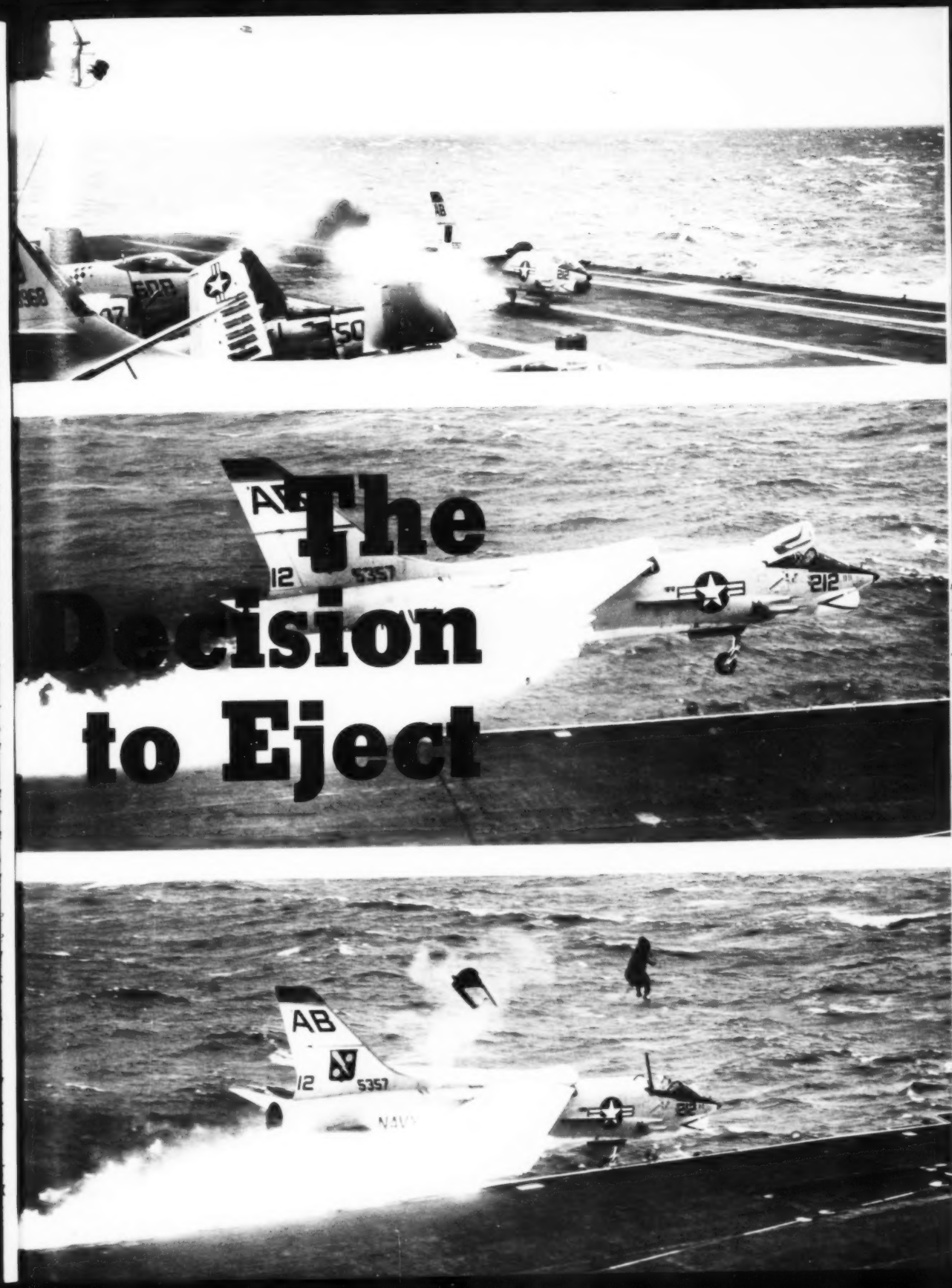
5. Flight and classroom instructions should train student pilots to be aware of the need for frequency discipline and insure that students are indoctrinated in the use of proper and timely phraseology.

6. Check your speech rate and enunciation. Are you regularly being requested to repeat a transmission? If so, you may be talking too fast or not clearly. (Do not be too self-critical if this happens occasionally as the controller may be listening to several frequencies and may not hear part of your transmission because he is working another pilot on a different frequency.)

7. Remember, in using a simplex frequency, when you talk you cannot hear on that frequency.

8. Assure your microphone button releases when you complete a transmission. Frequencies are often jammed by stuck mike buttons and even if an offender can be identified, there is no way to inform him of the situation.

9. As a cardinal rule, keep frequencies available for use by everyone to the maximum extent possible. ◄



The Decision to Eject

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, D.C. 20350

IN REPLY REFER TO
Op-05F/rjh
Ser 852P05

15 JAN 1970

MEMORANDUM FOR COMMANDERS OF ALL NAVAL AVIATION UNITS

Subj: Premature Ejections

1. Within the past two and a half years nine ejections have occurred that might be categorized as premature; four in this fiscal year, three of them in one week in December. These ejections are matters of concern. In each case the aircraft was controllable and continued to fly after the ejection.

2. There are many situations in flight which will evoke stress in any of us no matter how hard and tough we are. While we cannot anticipate or control when we are to be subjected to unusual stress in flight, we should at least strive to control the way we react to emergency situations. One of the ways to reduce loss of functional efficiency is to prepare ourselves mentally by thinking through in advance the situations that we might encounter and how we should react to them. This preparation would include more hangar flying, envisaging different tight situations and evaluating and discussing alternative courses of action.

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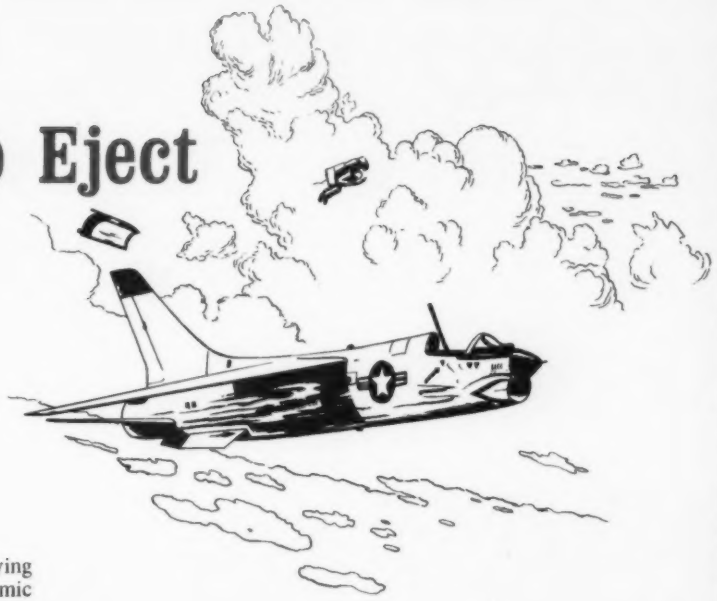
3. Ejection systems are more reliable and ejection envelopes have been expanded. These features provide more time for decision, especially in cases where the aircraft is still flyable. Pilots should consider the consequences of ejection as a part of their decision process and not think of ejection as the final step of a standard operating procedure. Prior to ejecting from a flyable or controllable aircraft, it is the pilot's responsibility to do everything reasonable to ensure that his abandoned craft will inflict the least possible damage on impact.

4. I enjoin all of you to discuss this matter with your pilots. We in Naval Aviation have never legislated the rules for leaving an aircraft in flight nor do we intend to. We ask only that this topic be discussed and thought out by everyone flying naval airplanes so that decisions in an emergency situation will be based on preparation rather than instinct.

Thomas F. Connolly

THOMAS F. CONNOLLY
DEPUTY CHIEF OF NAVAL OPERATIONS (AIR)

The Decision to Eject



By Robert A. Alkov, PhD
Head, Behavioral Sciences Division
Life Sciences Department
Naval Safety Center

THE ACT of forcibly firing a body from a flying machine traveling at high velocity, whose aerodynamic characteristics are rapidly changing from those of a bird to those of a lead brick, requires a decision to be made under stressful conditions, usually within a split second.

Freudians would point out that such action is analogous to birth trauma with the aviator forced to break the umbilical cord connecting him with the warm, hospitable environment of his cockpit and leave in much the same fashion as a baby is forcibly evicted from the womb. There *is* a tendency toward reluctance on the part of an aviator to depart from the apparent security of the aircraft cockpit with all its life-support systems, and take his chances with survival in a hostile environment.

The decision to eject is a cognitive (higher-level thought) process in which perception, knowledge, judgment, experience and maturity all play a role. The validity of any split-second decision made under stress will be contingent upon the reliability of perception, depth of knowledge, soundness of judgment, extent of experience and degree of maturity of the individual concerned.

Perception

Perceptions are influenced by our recent experiences with situations similar to those in which we currently find ourselves. Thus an aviator who has recently lost a buddy who ejected outside the performance envelope of his seat may delay ejecting even though the situation is unrecoverable. Another may eject needlessly before he has lost control of the situation because of a decision he made that morning before launch, based on an anticipated emergency which has in fact not developed.

Perceptions are also influenced by day-to-day physical states, emotions, motivations and anxieties of the individual. Our ideas come only through perceptions of physical objects in the external environment and those perceptions depend upon the state of our sensory organs. The range of energies which are adequate stimuli for our senses is small. We have only a tiny window to peer through in order to grasp a glimpse of reality. Contemporary aviators have many modern devices such as radar, radio and aircraft instruments available to extend the range of senses and broaden perception of their environment. But knowledge of conditions in the flying world is only as good as the information being fed to the brain. If senses are faulty, they may play tricks. If the brain processes data incorrectly because of faulty knowledge or habit patterns, wrong answers or decisions can result. Enough has been written elsewhere about physical fitness, adequate diet and rest, and not flying while under emotional stress, so we'll concern ourselves here with some of the other significant psychological factors.

Motivation

A professional aviator's performance should be motivated by a desire for mastery – self-mastery as well as positive control of an aircraft. When an aviator allows himself to become ego-involved in his flying, he may be in trouble. For then he is motivated more by desire to impress others than by desire for his own personal satisfaction in a job well done. Unfortunately, many an experienced naval aviator has fallen into traps set by pride and allowed himself to perceive a deteriorating situation as one he can safely overcome. Continued

Complete knowledge of your escape system envelope increases chances for successful ejection.

Stress and Anxiety

Moderate stress can increase anxiety to a level which will actually enhance performance by keeping us alert. This is the best antidote for complacency. But there is an optimum level of stress. If we are thrown into an overwhelmingly stressful situation, our anxieties may cause panic. When panic ensues, normal cognitive processes are blocked and knowledge, judgment and maturity do no good. As higher mental processes are blocked, neural functioning is reduced to spinal-cord level and the only responses available are reflexes. The most desirable situation, however, is for pilots to maintain self-control during emergency situations.

Resistance to panic (stress tolerance) can be increased through confidence in your aircraft and in yourself. Self-confidence comes from knowledge of limitations and abilities. Confidence in aircraft comes through knowledge and training in the aircraft's systems.

Knowledge, Experience and Judgment

Good judgment in an aircraft emergency also relies heavily upon thorough knowledge of the aircraft's systems and performance envelope. Knowledge comes through study and experience. A short cut to personal experience is to draw upon the experience of others. For this reason the development of NATOPS (Naval Air Training and Operating Procedures Standardization Program) has proven to be a significant contribution to aviation safety. Through NATOPS, naval aviators have at their command all the experience gleaned through the years by countless other aviators, often at a dear price. A professional aviator will always try to recover a malfunctioning aircraft if he can, but he must have certain prior criteria established for abandonment of such attempts. If he has complete knowledge of his escape system envelope, he will know there are certain limits beyond which he must never go. Planning ahead, then assuring his criteria have been met, means he will be ready to go when the time comes and this decision will be based upon the best data available.

Training

The safest way to gain experience and confidence in the emergency systems of an aircraft is through ground-based simulation. Aerospace physiology training units provide aviators with realistic ejection seat simulation every three years through the use of cartridge-initiated ejection seat trainers. Recent ejectee narratives received by NavSafeCen (Naval Safety Center) indicate that skill and confidence in seat system operations has been greatly enhanced by this training. Although formal training can help teach the mechanics of the ejection process, in the final analysis it is every aviator's own responsibility to prepare himself mentally for the possibility of ejection.

Final phase of successful ejection.

Maturity

Maturity comes early for some, late for some and never to others but there is no short cut to its acquisition. Mature decisions are rational, based only on the best available information and are not compromised by intense emotion, ego-involvement or distorted perceptions. A mature pilot considers the consequences of his actions and accepts responsibility for them. For instance, it is the pilot's responsibility to do everything within reason to ensure that his abandoned aircraft will inflict the least possible damage to personnel and property upon impact. The mature pilot wastes no time blaming others for his predicament but seeks to solve the problem in the best and safest way possible for all concerned. He does not let pride prevent him from asking for help when help is needed. Best of all, he learns from the recorded experiences of others.

The Decision

Recent cases of possible premature ejections have led to some serious soul searching. These cases are counterbalanced by some ejections which came too late. A study of unsuccessful ejections by NavSafeCen revealed that pilot delay in initiating ejection was a factor in about one-third of the fatal ejections occurring in the U.S. Navy during a five-year period from 1964-1968. On the other hand, a study of runway accidents showed that in certain circumstances staying with the aircraft was a favorable factor in survival. For instance, in field touchdown and landing rollout emergencies where fire was not already present, chances of survival were 96 percent by staying with the aircraft versus 73 percent by ejecting at ground level. Thus in emergencies developing during approach and landing evolutions, if ejection was not necessary during the approach, chances for survival were significantly greater for those who stayed with the aircraft.

In Conclusion

It is extremely difficult, if not altogether impossible, to make definitive statements about when and what procedures should be followed concerning ejection in various emergencies and in various phases of flight. Many factors must be considered by the pilot. Some of these are: ordnance load, fuel load, presence and location of emergency arresting gear, type aircraft, type seat, airspeed/ground speed, attitude, altitude, runway conditions and characteristics of the area around the runway. In the final analysis, the critical decision is the pilot's to make alone. Success will depend upon knowledge of these conditions and upon preparation. The aviator who is not taken by surprise by the necessity for sudden decisions is one who is knowledgeable, professional, self-confident, mature and, above all, highly trained. ◄

DOWN WITH VISORS

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ANOTHER story for the birds unfolded one clear afternoon when the pilot and RIO in an F-4B were returning to base on the wing of another *Phantom* from the same squadron. The leader of the two aircraft had contacted the tower and received clearance to land. As the two planes approached the numbers the leader spotted two large birds on a collision course and broke left quickly. His wingman saw a black object immediately in front of him but before he could take evasive action, clobbered a large bird which shattered the right front windshield and entered the cockpit. The pilot reported in his statement that "the situation (about 10 seconds in duration) was one of confusion; high noise level from windblast and lots of blood and feathers in the cockpit. I checked my engine instruments and realized we were still flying. I had no communications (his cord had been ripped off) and couldn't see out of one eye. I was too close and too fast for a straight-in so I dirtied up, did a left 360 and landed."

Now let's pick up the flight leader's story. "I saw at least two large black birds directly in our flight path. I broke port and away from my wingman. The birds appeared to pass close abeam and between the two aircraft . . . I called my wingman but he did not acknowledge. I watched him commence a climbing port turn downwind for the duty runway and saw his gear and flaps go down. I informed the tower of a possible bird strike and joined up on his right. I noted his broken windscreen, declared an emergency and flew his wing the remainder of the approach. At no time did he acknowledge my or the tower's transmissions and the RIO appeared to be slumped forward in the rear seat."

After the wingman landed he popped his drogue chute and rolled out to the end of the runway. All emergency equipment except the ambulance was waiting when he stopped. (Crossed communications and misunderstanding had stopped the ambulance just as it was leaving the dispensary but a second call a few minutes later sent it to the scene.) The pilot and RIO were taken to sick bay. Both had been struck by pieces of the windshield and bird fragments. The pilot suffered corneal abrasion, contusion of the right eye socket and abrasions of his right shoulder and neck. The RIO was not as lucky. He suffered considerable lacerations of his right eye, which subsequently necessitated its removal.

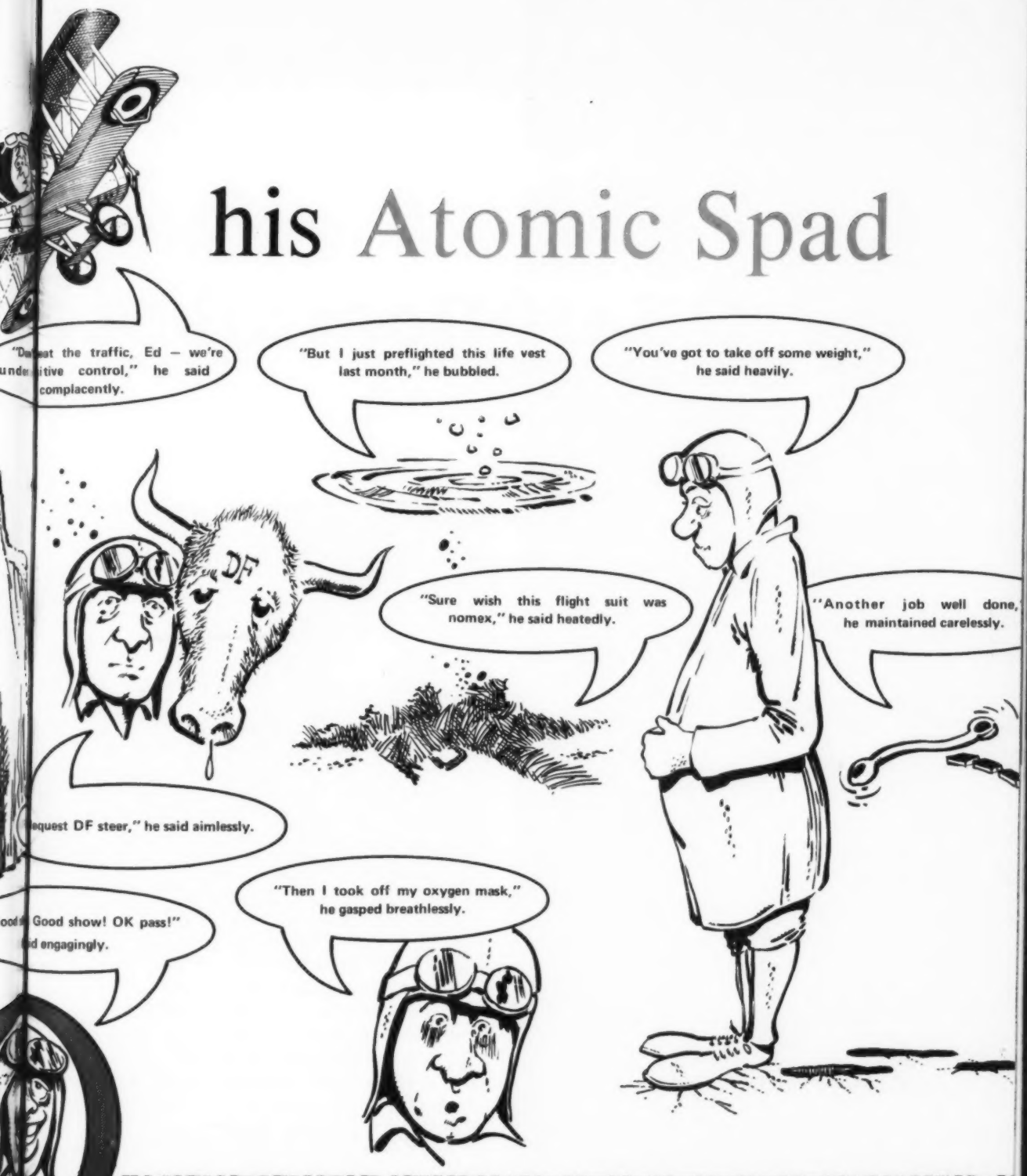
Squadron SOP required the use of visors down *during the peak months of migrating fowl.* The irony of this tragic incident is that the RIO had worn his visor down until during the approach when he raised it momentarily to wipe sweat from his eyes and forgot to lower it again. The pilot had not lowered his visor at any time during the flight.

"This incident provides a tragic message to all aircrewmen emphasizing the necessity of utilizing visors, both day and night," the squadron C.O. wrote. "Visor use has been restated to all aircrewmen in this command. Mandatory use of the visor has now been made a part of our SOP and pertains to operations 24 hours a day, 12 months a year." ◀

Remember the Tom Swift books? Or if you're too young for that, maybe you played the "Swifty" game popular a few years ago until it was groaned out of existence. This feature is the brainchild of Lt Harry Oxenhandler, MC, USN. If you think of some dandy aviation safety Swifties, send them to the Editor of APPROACH. Get yourself into print!

Tom Swift and

his Atomic Spad



The correct way to wear the survivor's sling, or horse collar, is demonstrated by a JEST instructor.

Self-Confidence f

THE SINGLE most important thing a downed pilot or crewman has going for him is confidence in his own ability to survive. Backing up this self-confidence is his trust in search and rescue procedures, survival equipment and rescue crews.

Building self-confidence for survival is the mission of JEST, the Navy's Jungle Environmental Survival Training School at NAS Cubi Point in the Philippines. The thinking behind the JEST program is that if a person does something once and does it well (survival training experiences) it is easier for him the next time he has to do it (real-life survival situation). JEST gives a real feel for the jungle to the 300 pilots and crewmen who pass through its courses each month.

To most people "jungle" means Grade B movie horrors involving snakes, quicksand, swamps and man-grabbing foliage. Few persons realize that such animals as pigs, deer and even chickens live in the jungles of SEAsia. The jungle affords food, water, shelter and concealment from hostile forces and offers perhaps the best of all environments for a man who is attempting to survive.

JEST offers three basic survival courses:

- A 24-hour course including a night in the jungle during which an instructor shows students how to build shelter and find and cook food.
- A 48-hour course in which instructors remain in the background the second night out and offer help only if students run into serious difficulties.
- A nine-hour course devoted to short-term survival. This is the course most used by pilots and crewmen of the Seventh Fleet.

Story and Photos by
JOC Richard P. Benjamin

for SURVIVAL

A JEST instructor demonstrates proper use of a Mk-13 Mod 0 flare for students. Average burning time of such a flare is 18 to 20 seconds.

APPROACH has already featured the 24-hour and 48-hour courses. This article then will deal with the nine-hour course tailored to the man in a short-term survival situation. *(Please see "Shopping Center for Survival," September, 1968 APPROACH, page 26.)*

Since rescue is speedier these days than it used to be, the JEST short course is based on the premise that a man is going to be on the ground for only a matter of hours before he is rescued. Quick pickup has been the

A VA-82 pilot learns how to rig a rappelling line for descent from a tree.

The JEST demonstration tower gives a "survivor" a chance to go through "helicopter" boarding procedures.

Since a downed pilot never knows what type of rescue device he will have to use for helicopter hoist, all equipment used in SEAsia is demonstrated to JEST students.

Once the rescue cable is attached to the V-ring on a pilot's torso harness, he need not fear being left behind if the helo has to make a rapid departure.

trend in most survival situations in SEAsia. Credit for this, JEST says, goes to rescue forces in SEAsia and the standardization of rescue procedures throughout the services.

What *does* a person in a short-term survival situation need?

Survivor Needs Water

Second to confidence that he will survive and be rescued, a survivor needs *water.* A man can go up to 30 days without food, JEST instructors say, but water is an absolute necessity in any survival situation.

Just how long a person can go without water depends upon the individual. A variety of factors are involved. When a person suddenly finds himself in a survival situation, he is usually in a mild state of shock and anxiety and adrenalin starts pumping rapidly through his system. The problem is compounded in the tropics because high temperature and humidity lead to abundant perspiration. As the survivor begins to dehydrate, his craving for water increases. If his thirst is not satisfied or if he is unaware that water is within easy reach in the jungle, his anxiety can mount to such an extent that survival becomes an "iffy" proposition.

Lots of Water

In the jungle, however, this need not happen. Even in the dryest season there is no reason for a man to go thirsty. The very tree he leans against might provide a couple of canteens of water. At JEST, pilots and aircrewmen learn to recognize the water-giving trees prevalent throughout SEAsia as well as water-giving vines and bamboo stalks. The plumper the vine, or bamboo, the more water it contains. If a vine cannot be positively identified as one containing drinkable water, JEST

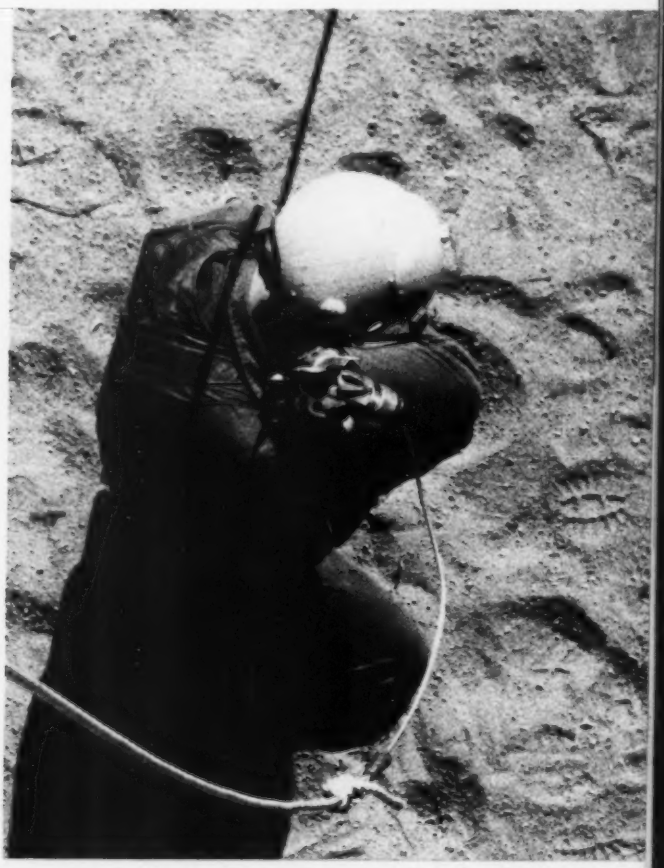
An HC-7 pilot practices with a signal mirror as a JEST instructor watches.

teaches that the taste test should be used. If the fluid is exceptionally warm or if it has a hot peppery taste, don't drink it. If it is cool and *tastes* like water, it most likely *is*.

It takes considerably more time to get water from a tree than from a water-giving vine or bamboo stalk. A "V" notch must be cut into the tree trunk for the fluid to drain and a leaf should be placed at the bottom of the notch to funnel the fluid so that it does not merely run down the trunk. The fluid drips slowly and filling a canteen can take several hours. Drinkable water can be obtained from water trees only during nighttime.

JEST instructors warn their students never to go to a river or stream for water in a hostile environment. Hostile forces know downed aviators and crewmen need water. In addition, rivers and streams in SEAsia are often contaminated.

Continued



All students attending the JEST nine-hour course are required to take a ride on the jungle penetrator, now used with the two-pronged rescue hook as the primary rescue device. Students learn to always keep the hoist cable clear of the body and to hug the penetrator shaft.

(Please see "The Better to Rescue You With . . .," March, 1970 APPROACH, page 18.)

Jungle Medications

Another subject taught at JEST is how to obtain medications in the jungle. Most pilots and crewmen carry SEEK kits containing some medications. However, if a kit is lost or for some reason unusable, the survivor must still think about those cuts and scratches he will undoubtedly have. Because of high humidity, bugs and parasites in the jungle, cuts and scratches must be attended to *immediately*. A scratch which might normally heal itself in a stateside environment can become infected in a matter of hours in the jungle. JEST courses teach recognition of medicinal plants found throughout the region. For example, one of them provides iodine and another contains a blood coagulant.

Correct procedure for rigging a rappelling line to the torso harness is demonstrated.

A helo vectoring exercise builds the student's confidence in his ability to handle a real-life survival and rescue situation.

A VAQ-135 pilot uses a survival radio for initial contact of helo during a vectoring exercise.

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A Negrito instructor shows students how to extract water from the water tree which is prevalent throughout SEAsia.

Rescue Devices

Once a downed flier is confident that jungle survival is a relatively simple matter he is almost home free, *but not quite.* He must still escape. To help him, JEST teaches operation and use of rescue devices employed throughout SEAsia by all services.

"A man never knows who is going to pick him up," say the JEST instructors. "It could be an Air Force *Jolly Green*, an Army *Dust Off* or any other kind of helo in use."

A helo attempting rescue pick-up could well have combat fire support as its main mission. If so, an airman on the ground could be thrown a knotted rope, a rope ladder, a McGuire Rig or a sling. He must be prepared for all eventualities.[1]

Continued

[1]According to an Air Force spokesman, the McGuire Rig consists of 120 feet of climbing rope with three loops at the end. Above each loop is a smaller loop with a buckle adapter. The survivor sits in a loop and adjusts the smaller loop around his wrist so that if he loses consciousness during the hoist, he will not fall. The survivor/survivors are then flown to a clear area where the helo lands and takes the men aboard. This is used by both the Air Force and Army.

A JEST student drinks from a water vine during a jungle trek.

A VAW-135 pilot watches as a Negrito instructor builds a bamboo pressure cooker.

Again confidence enters the picture.

Operating under the philosophy that the best way for a man to retain information or knowledge concerning a piece of equipment is to put it in his hands, JEST does just that. While infrequently used devices are only demonstrated, the most common ones are actually tried out by the school's students. JEST instructors say the best way to build a man's confidence in his ability to use a piece of equipment is to have him operate it blindfolded. If he can handle it with his eyes closed, he can handle it under any other conditions.

Jungle Penetrator

The primary rescue device is the two-prong rescue hook combined with a jungle penetrator. *(See "The Better to Rescue You With," March 1970 APPROACH, page 18.)* The penetrator is shaped like a bullet and heavy enough to fall through the thickest jungle canopy. It is attached to the helo cable by one side of the two-pronged rescue hook. Pilots and crewmen equipped with torso harnesses hook the other prong to their V-rings for speedy rescue. If the person on the ground does not have a torso harness with V-ring, all is not lost. The penetrator has three fold-down seats and straps to hold survivors on the device. Boarding procedure in this instance is as follows: When the penetrator hits the ground and static electricity has been discharged, kneel beside it and put one of the straps around you, making sure the strap hook is secured properly. Still kneeling, slip the penetrator between your legs and lower one of the seats. Give a "thumbs up" signal and away you go.

It's the Little Things That Count

Small details about the penetrator, as well as other rescue devices, are important. Being unprepared for little things can cause serious problems in an actual rescue

A "survivor" makes his descent from the JEST demonstration tower using the rappelling method taught by the school.

With the two-pronged rescue hook secured in his torso harness V-ring, a *Bronco* pilot from VAL-4 is ready for "hoist."

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situation. Some of the little things to watch out for when using the penetrator are:

- *Never* get on the penetrator seat before putting the strap around you. If you do, your chances of falling off and being seriously injured are quite good should the helo take a sudden rise or be forced into a hasty departure. *You* will go if the *helo* goes, provided you are strapped on.
- Use only *one* seat on the penetrator for each person to be rescued. If you should straddle two seats for an added measure of safety, your legs will be spread apart and could be seriously hurt by banging against heavy tree limbs. When only one seat is used, your legs hang straight, streamlining your body.
- Make sure the helo cable is clear before giving thumbs up. If the cable just happens to get wrapped around your foot you're in trouble.
- Keep your flight helmet and wear it. Volumes have been written about people who didn't keep their helmets on and, as a consequence, suffered head injuries while being hauled from ground to helo through trees.
- Keep your hands away from the cable and swivel joint on the penetrator. There have been instances in which rescued pilots have held onto the cable and, after they reached the top, had to be let down again to get their hands out of the pulley. Also, if your finger gets stuck in the swivel joint, the 80 seconds it takes to raise you to the helo on a fully-extended hoist is a long time to be hurting. The safest thing to do with your hands is hug the penetrator's body.
- Once you have reached the helo, don't try to help yourself inside. That's the crewman's job and he knows exactly how to do it. As long as you are attached to the cable, there is no chance that you will be dropped, but you just might pull the crewman you love so dearly out of the helo door.

Trees

Air Force statistics show that one out of three ejectees in SEAsia ends up in trees, and some tree canopies are more than 300 feet high. The pilot may find himself at the top of a tree or in the middle and there has to be some way for him to get down. JEST currently teaches a method of rappelling using the torso harness. The idea is to safely lower yourself to the ground, using a length of tubular nylon line run through the torso harness. *(The Naval Air Development Center is currently evaluating a lowering device consisting of 200 feet of small wire cable with a disc type braking assembly controlled by a thumb screw. The device measures 2½" x 2½" x 4", weighs two pounds and will be carried in the SV-2A survival vest.)*

Still more information covered in the nine-hour survival course is the use of flares, signal mirrors and survival radios. If aircraft are available from nearby Helicopter Support Squadron SEVEN, Detachment Cubi, each student has a chance to vector a helicopter into his hidden position in the jungle. This, JEST instructors say, is an excellent confidence builder.

A Negrito instructor watches a student make an animal snare.

Fifteen other JEST confidence builders are the Negrito instructors who work for the school. To them the jungle is a way of life and they are employed by the Navy to pass some of their knowledge on to JEST students. *("Shopping Center for Survival," September, 1968 APPROACH.)*

The mission of JEST also includes research and development of survival equipment and procedures for FAETUPAC. The goal is to ultimately standardize rescue equipment and procedures for all services and, by training, instill in all aviators and aircrewmen the confidence needed to survive. ◄

Survival

UNDETERMINED material failure caused the flaps on an F-4B to retract during catapult launch. The aircraft over-rotated and stalled and the pilot and RIO ejected. The RIO describes his difficulties:

"Before I could move my hand for the ejection handle, the canopy blew. *(The pilot had already initiated a command ejection. – Ed.)* There was a sudden rush of wind, a loud bang and upward acceleration. It seemed like a smooth trip. My head was bent over so that I was looking at the water. A quick shot of sky, a slight tug, a stronger pull and again I saw water beginning to come up. The whole time cycle between the start of the cat stroke and leaving the aircraft was extremely short – around 5 to 10 seconds. Consequently I was still in a good position for the ejection with the exception that my head was probably 2 to 3 inches forward of the seat back.

"When the chute opened I ripped my oxygen mask off, threw it away and pulled the right side of my life vest. I had the new type with an inflatable collar – the LPA-1 – and I remembered having been instructed to pull the right toggle first (see box). For some reason I didn't pull the left side at all but thought one side would do the job. I forgot about my seat pan liferaft and decided to get ready to enter the water, which was only a few feet below.

"I went under water a foot or so and was immediately dragged 5 to 10 feet before the chute collapsed. I reached up to undo my koch fittings but couldn't find them. At this time I wasn't floating high enough in the water and remembered the left side of the life vest, which I inflated. I took my gloves off next to try and locate the koch fittings and get free of several shroud lines around my left leg. With some difficulty I found the left koch fitting under the edge of my flotation collar. The right one was not visible so for some reason I thought I'd undone it.

"Shroud lines were my next concern but I couldn't locate my shroud cutter because it was hidden under the inflated vest or because my survival vest had twisted around so it wasn't where I was looking. One shroud line was wrapped around my kneeboard and several others were wrapped around something hanging on the left side of my survival gear. After tracing the shroud lines and unwinding the tangles I thought I was clear.

"By now the helicopter had passed overhead. I gave a hands-up OK signal and saw my pilot being hoisted to the helicopter. I had seen his chute and helmet a few

Tangle

seconds before. Now I realized something was pulling me down. I reached down about waist level and much to my surprise, located my right koch fitting, still fastened. Staying afloat was easier after the fitting was undone. *(This is perhaps one of the great understatements of all time. – Ed.)* I had let the seat pack go while I was trying to get out of the shroud lines because I thought it might have been causing my entanglement and I didn't figure I would need it because the helo had seen me and I had signal flares attached to my life vest.

"After the helo picked up the pilot, it took off toward the ship and I figured the crew had lost sight of me. My smoke flares were hung on the bottom left side of my life vest. I tried to get one out but experienced some difficulty since the life vest had twisted around a little bit and the flares had to be extracted from their case to the rear of the vest. I finally got a flare out and when the helo circled downwind and turned toward me, I set it off to make sure I was seen. The helo dropped a three-pronged seat within six feet of me. It was easy to climb onto and I was hoisted right up and back we went to the ship."

Delay in locating the koch fittings may have contributed to shroud line entanglement, the investigating flight surgeon states. The RIO's difficulty locating his shroud cutter was due to his unfamiliarity with its location under the recently-issued LPA-1.

The flight surgeon recommended:

- Further study regarding the LPA-1 life vest interfering with the location and use of other survival equipment.
- Refresher briefings on proper technique for parachute disconnections and continual practice.
- Prompt, thorough instruction on use of equipment recently issued.

LPA-1 Life Preserver

THE correct procedure for inflating an LPA-1 life preserver is to pull both toggles simultaneously or, if that is not possible for some reason, pull the *right* toggle first. Pulling the left toggle first causes binding of the right release pin. This binding can be, and has been, misinterpreted as full actuation of the right cartridge when in reality only the pin has been pulled, releasing the right lobe from its case. The result of this sequence is partial inflation of the right waist lobe and no inflation of the collar lobe.

There is concern in the fleet that if the left toggle of the LPA-1 (which inflates all of the left waist lobe and part of the right waist lobe) is pulled first by mistake, pressure released by actuation of the left toggle could rupture the left waist lobe seam because the right lobe is still "packed." The Safety Center contacted ACED (Aerospace Crew Equipment Laboratory) and was advised that this is not a problem with a properly manufactured LPA-1. However, in order to insure that every LPA-1 in the fleet will perform correctly in an emergency, ACED intends to call for a one-time inflation test of all LPA-1 life preservers.

Problem areas with the present LPA-1 have been brought to the attention of ACED. In the meantime, be sure to either pull both toggles *at the same time* or pull the *right* toggle first.

No R and R +High Tempo Combat Ops= FATIGUE

FATIGUE is suspected to have been a major factor in an accident involving a Marine helicopter on an in-country mission. The pilot apparently lost control of the aircraft during a downwind turn. Subsequent investigation revealed some pertinent information which gave credence to the emphasis placed on pilot fatigue as being partially responsible. For three months preceding the accident, this pilot had flown an average of 55 hours of combat time monthly. At the time of the accident he had been working for 7.5 hours, 5.6 of which he had spent airborne. When the crash took place there was still an estimated hour of flight time required to complete the mission.

It is generally conceded that combat associated operations are performed at a considerably higher tempo than are those operations conducted in a peacetime environment. Attention at the command level is being constantly directed to this fact. By the same token, there is concern about insufficient monthly flight hours in some areas – however there must be a balance established and maintained between enough and too much.

Without going into the details of what happened, here are some pertinent comments by the investigating flight surgeon:

"Regarding mental state and fatigue, the pilot had taken no leave for over one year and was involved in an accident the previous month where he was considered to be a contributing factor. This brings up the important matter of adequate pilot rest. It is my recommendation that all pilots and, if possible, all crewmembers be *required* to take R&R, leave, etc., at spaced intervals so that there is no quarterly period in which some sort of trip out of

the combat zone is not taken. The psychological stress of continuous tactical flying is tremendous and fatigue symptoms can be subtle and easily ignored by pilots and flight surgeons. A brief respite from the combat milieu is usually dramatic in its effect on improving pilot morale and outlook . . . .

"In summary, this accident was primarily a result of an abrupt and impatient action by the pilot . . . irritability is often a symptom of general fatigue and impatience can be a secondary product. Insufficient communication between pilot and copilot was also an aggravating factor, possibly yet another symptom of general fatigue. I would strongly recommend strict adherence to the guidelines on daily flying and encourage mandatory scheduled rest periods. It is the pilot's responsibility to be increasingly cognizant of the subtle symptoms of fatigue and the symptoms and consequences of fatigue should be periodically stressed by the flight surgeon."

This, the C.O. says, is a classic example of both mental and physical fatigue contributing to an accident. Noting that the squadron was undermanned at the time (a manning level of 45 pilots with only 30 assigned for three months preceding the accident), he continues, "It is readily apparent that this type of performance cannot be safely maintained without adequate periodic crew rest. Such crew rest would ideally be outside the combat environment and be available at least on a quarterly basis. Commanders must insure that all aircrewmen take advantage of whatever crew rest periods are available."

Air Wing guidelines for standard flight time are: 6 hours/day, 30 hours/week and 90 hours/month.

"These guidelines," the Air Group Commander pointed out in the accident report, "are adhered to as closely as the combat situation permits. Crewmembers are grounded when they reach 90 hours in any one month and need the approval of the flight surgeon before they can continue flying. The Group Commander, squadron commanders, safety officers and flight surgeons closely monitor crewmember flight time in order to recognize early signs of fatigue or ineffectiveness in individual performance.

"The medical department and squadron flight surgeons have been directed to closely monitor crewmembers' R&R and leave to ensure that it is taken and adequately spaced – preferably during the fifth or sixth and ninth or tenth months of the tour."

"The implementation of the above procedures," the Air Wing Commander states, "will hopefully preclude such a (no leave) choice in the future. The problem of out-of-country crew rest for combat aircrewmen has been the subject of continuing study within this command." At the time he wrote his comments, new programs had been implemented in the Wing to provide a substantial number of aircrews with the opportunity to spend some time out-of-country each month.

Head Bone Help

A GOOD fit, a secure chin strap and a snug nape strap are the primary factors in helmet retention. Where applicable, the oxygen mask fastened on both sides also adds to helmet security. Everybody should know all this yet we continue to see reports of pilots and crewmen who wear their helmets loose and, consequently, have unnecessary difficulties in emergencies.

First case in point is that of an A-7 pilot who ejected after a midair collision. His chin strap was snug but his helmet fitted loosely and his nape strap was loose. When he ejected, using the alternate handle, his head was down and his helmet rotated over his eyes. (A point in his favor was that he was flying with his visor down. During the ejection it protected his face.)

Second case in point is that of a crewmember who bailed out of an EA-3B. His helmet chin strap was loosely secured. When the parachute deployed, the opening shock separated his APH-6 single visor helmet from his head and broke the visor. His helmet remained attached by the communications cord so he was able to recover it during parachute descent and put it back on.

Case three: A helo pilot who had not cinched his APH-6 helmet strap tight before flight lost his helmet when the UH-1E hit the ground while attempting to land. His helmet flew off on impact and he hit his head, sustaining two cuts which required stitches. He managed to exit the aircraft, then passed out.

Moral: Cinch up your chin strap and your nape strap so that your helmet will stay with you for maximum protection of your one and only head bone.

No Big Thing

WHILE approaching break as No. 2 in a three-plane flight, at 1200 feet and 250 knots, an A-4E collided with a bird. The bird smashed a 5-inch hole in the windshield, then hit the pilot's visor. S.O.P. in this pilot's squadron requires that a visor, dark or clear, be worn in the down position during all flights.

The fact that the pilot's visor was down was the primary reason for no injury and no aircraft loss!

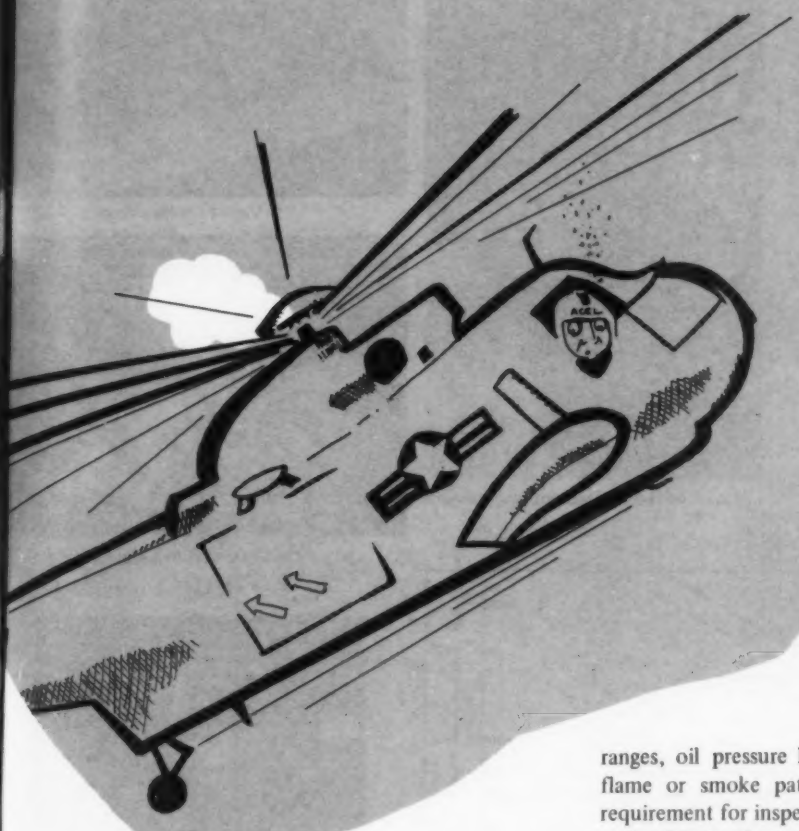
Go or No-Go?

DURING the average aviator's career a situation will arise which calls for an executive decision. Used in this context, need for such a decision arises when weighing pros and cons of whether to take off from a strange field and go home with "minor" discrepancies, pass up a suitable field with one engine out because homebase is less than an hour away or try an approach into a strange field with weather right at minimums and a wide open alternate only 15 minutes away. Executive decision baloney! More like good common sense or the lack thereof!

Fitting nicely into this category was an incident which occurred one bright, clear morning in the Big Hills country. A helicopter pilot landed in a fairly flat area at about 6500 feet elevation to offload a couple of passengers involved in a SAR exercise. The smell of burning oil was quite obvious and one engine was emitting white smoke. (A big clue that all was not right with that power plant!) After both engines were secured, the crew chief and pilots inspected the suspect motor and found a leak around one of the bearings. After rebuttoning all engine cowlings, a decision was made to crank up and proceed to some base. Insufficient power was available for a single-engine takeoff, so both engines were used to get airborne. After takeoff the sick engine was secured and the pilot, indicating Mach point 1, headed through the mountain passes and finally made an uneventful landing at a military field. (Whew! Wasn't sure he was going to make it.)

When the engine was disassembled the front bearing housing assembly was found to be cracked. The engine was *not* fit for flight.

Now before we play this hand, let's review the bidding. Prudence, good judgment and plain old common sense should be a part of each aviator's bag on every flight – just like NATOPS. We have far too many records of incidents and accidents already stored in the data banks which were caused by poor maintenance or material failures, without further complicating aviation safety by inserting nonthinking pilots. Pilots of aircraft



with reciprocating engines always have had certain set parameters outside of which flight must not be attempted. These parameters involve minimum and maximum cylinder head temperatures, prescribed oil temperatures and pressures and acceptable magneto checks (considering the power plant only). Additionally, any unusual flame patterns or smoke coming out of the stacks makes flight a no-go. Turbine engines have fewer but equally important parameters, such as RPM/EGT ranges, oil pressure limits and, of course, any unusual flame or smoke patterns that would also indicate a requirement for inspection *and* repair.

In this incident the pilot was not skillful – he was just plain lucky. There was no urgency involved. He was not in enemy territory and no one was shooting at him. There wasn't any severe weather forecast to make it dangerous for him to stay where he was. All factors considered, discretion indicated no-go!

It's one thing to stack the odds in your favor as much as possible and then take a calculated risk but it's another thing to proceed without regard to the risks involved. When you're going to do your thing, think first!

FORUM

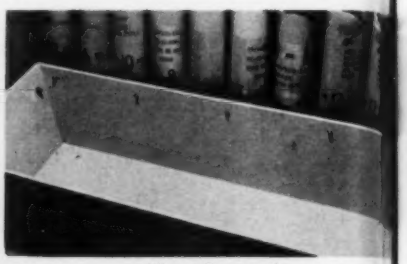
P-3 Stowage Box

VP-16 has developed an excellent method for solving the problem of loose gear stowage aboard our P-3s. We installed a locally manufactured box on the deck forward of the main entrance door. It is covered with a strong canvas material which is fastened to rings on the base of the box by six quick release clamps (model No. FDC 1575), and allows easy removal of the cover and access to the interior of the box. The box is used to store tiedown chains, extra line, navigation bags, helmet bags and other miscellaneous gear and eliminates the danger that these objects can create if left loose on the deck. We hope this safety tip will prove beneficial to other patrol squadrons.

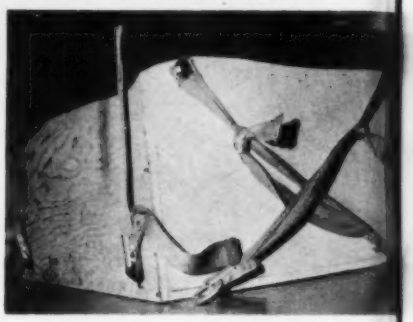
LCDR J. R. Boatright
ASO VP-16

• We're happy to pass along your idea to all VP squadrons. It might also be useful to VR squadrons as well. It has been our experience that VR planes, more so than VP, have too much loose gear adrift. One word of caution; never stow containers of oil, hydraulic fluid, cleaning solvents or the like in this box when there is any cloth covered material present. The fire hazard created by rags soaked with flammable fluid is obvious.

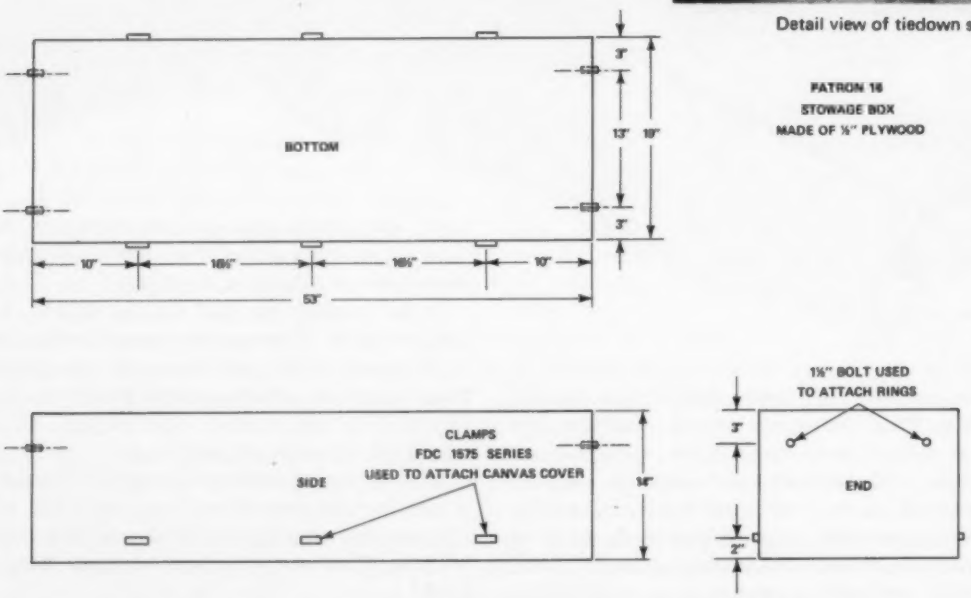
Location of stowage box looking forward.



View of empty box.



Detail view of tiedown straps.



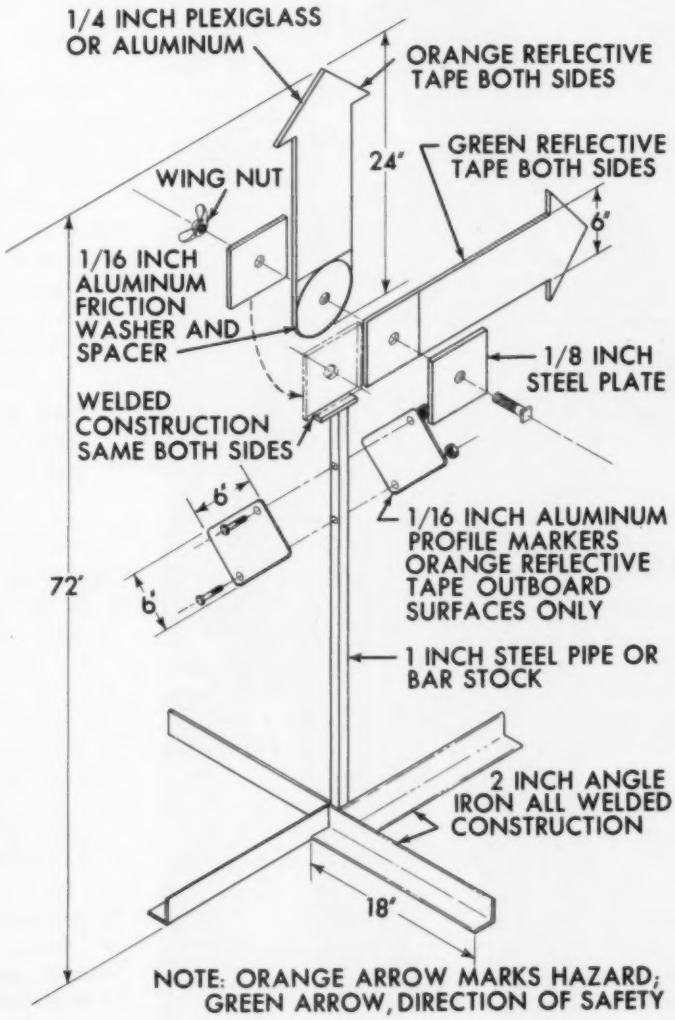
Do you have a question regarding materials or procedures now in use in Naval Aviation? For an answer send it to FORUM, Naval Safety Center, NAS Norfolk, Va. 23511.

The Reminder

IT is an all hands responsibility to stay on the lookout for hazards and to find ways to safely avoid them. Slogans and posters need devices or eye catchers as additional reminders and since darkness reduces the capability to see, a device also has to be readily seen at night or in poorly lighted areas to be effective. A crunch occurred here when the driver of a tractor, concentrating on maneuvering a tall workstand to avoid the hangar door tracks, ran into and damaged the trailing edge of an aircraft wing. This incident was responsible for developing *The Reminder*. I'm enclosing some pictures and a schematic of it. *The Reminder* is a stick figure; nothing to read, just to heed. It points out hazards in both day and nighttime. The arrow arms alert personnel working under wing tips, crane booms and MAD booms. They also can be moved to indicate hazards such as aircraft on jacks, open fuel pits and construction areas, just to mention a few examples. *The Reminder* is aircraft accident prevention at work.

LT R. D. Kessmann

• Thanks for sharing your "baby" with everyone in aviation. Sounds like a mighty good idea to us.



PASS IT ALONG!

Each copy of APPROACH is meant for ten readers.

The Professional

THIS word, perhaps more than any other, is used in naval aviation to describe what we should strive to obtain. Professionalism.

Aviation is our stated profession and as aviators we are the members which collectively constitute this fraternity.

Let us now state exactly what a professional is and then we'll take a look to see if we, as aviators, are in fact worthy to wear this most coveted accolade.

The dictionary defines a professional as:

"One who is engaged in one of the learned professions or in an occupation requiring a high level of training and proficiency."

As to that part of our definition which relates to the requirement for a "high level of training and proficiency," I feel that we can all agree that we as Naval Aviators qualify for membership in the Fraternity of Professionals.

For the most part, every man wearing the "Navy Wings of Gold" above his left breast pocket has acquired considerable academic training, has successfully undergone an intensive physical, mental and psychological screening process and has further successfully completed an intensive program designed to ensure receipt of the required specialized training.

So now, we have at least partially equipped ourselves to seek admission into the Fraternal Order of Professionals. But, perhaps another part of the definition of "Professional" should read, "One who accepts the trust of others and the *responsibility* for that trust."

When you "bare" yourself to the surgeon's knife, you have every right – legal, moral and otherwise – to believe that the man on the other end of that knife is a professional in every sense of the word. You are in fact

OLD Established Airline soliciting applications for membership into the Professional Aviators Fraternity. Only mature, dedicated, sincere and responsible persons need apply.

By MAJ D. A. Hogden, USMC

placing a trust, a confidence, a faith in that surgeon. A trust in his specialized training, his intensive academic preparation and a *trust* in the surgeon's *responsibilities* to his profession.

The *responsibilities* of the surgeon require him to ensure that he is abreast of the latest surgical techniques, has the required equipment in readiness, has researched, studied and understands procedures for each particular operation, has briefed his surgical team on their duties and any emergencies that could *possibly* be encountered, blood types have been cross-matched, etc, etc. . . .

As in medicine, so it is in aviation. If we want to consider ours as a Fraternity of Professionals, then we must meet the criteria of definition. A Professional – a man willing to accept the trust of others – a man willing to accept the *responsiblities* of that profession.

To me, this means that every person who boards our aircraft or any person who requires the support of our aircraft, has every right – legal, moral or otherwise – to expect that a *professional* is "up front."

Now, then, let's get down to the nitty-gritty. What are the *responsibilities* of our profession?

Our single major *responsibility* to the profession requires that we hold ourselves in a state of *physical and mental readiness to perform any mission* which our type aircraft is capable of performing.

More specifically, our *responsibility* requires us:

- To keep our bodies in good health and physical condition at all times.
- To keep ourselves abreast of, and proficient in, all aspects of aviation; instruments, ATC procedures, state-of-the-art changes, etc.
- To know our aircraft, its capabilities, limitations, crew missions, emergency procedures and survival techniques.
- To be willing to accept nothing less than perfection from ourselves, crewmembers, aviation associated personnel *and* to be able to provide instruction and guidance where indicated *and* to do so!
- To be aware of and to execute all orders and instructions relating to our profession.

There they are, all laid out coldly for all to see – the requirements for admission into the Fraternal Order of Professional Aviators.

Tough entrance requirements? You bet your sweet bippy they are! They require dedication, sound judgment, good attitude, midnight oil and *practice*.

I recall reading a story concerning practice. It involved a golf professional and a spectator. After a particularly excellent sand shot, this particular golf pro overheard a spectator saying, "Boy, is he ever a lucky sand player." The golfer, thinking back over the countless hours he had spent practicing sand shots, was heard to retort, "Yeah, I'm lucky – and the more I *practice*, the *luckier* I get."

Sequels to this little story abound in aviation. You will discover that the more you practice, the "luckier" you will become in flying a perfect GCA or tacan approach, the "luckier" you will become in flying mission profiles "right on the money," and so on and on . . .

Actually, luck plays no part in making a professional aviator. Dedication, hard work, good attitude and practice are the real ingredients necessary.

Well, how about it? Are *you* ready to accept the *trust and responsibilities* required? Are *you* ready to expend the time and effort required? Are *you* ready to pick up the tab for the price of becoming a true *professional*?

Nowhere in today's naval establishment, with our ever-increasing world responsibilities, or in today's crowded skies is there room for anything less than *professional aviators*.

Some Have It Some Don't

THERE'S something out there. Some people have it and some don't. If you catch it, you'll know. Unfortunately, it isn't as contagious as the Hong Kong flu.

You really dig people who have it. They do all right. People without it get mad, make mistakes, do silly things and get into trouble.

Let's take a for instance.

You want to make a left-hand turn onto a busy two-lane road. But, for the last five minutes, your path has been blocked by oncoming traffic. Then, just as you spot a hole in the traffic, someone makes a left turn in front of you.

Then it happens. Another driver notices you, slows a bit and allows you to make the turn. You think to yourself, "Now there's a swell guy. I like him."

He has it.

Later you're sitting behind a long line of cars, waiting your turn to pull off the freeway. Suddenly, some nut passes you and forces his way in front of someone up ahead. You're a little peeved by this action.

That guy didn't have it.

Now you're in the middle. You've met one who has it and one who doesn't.

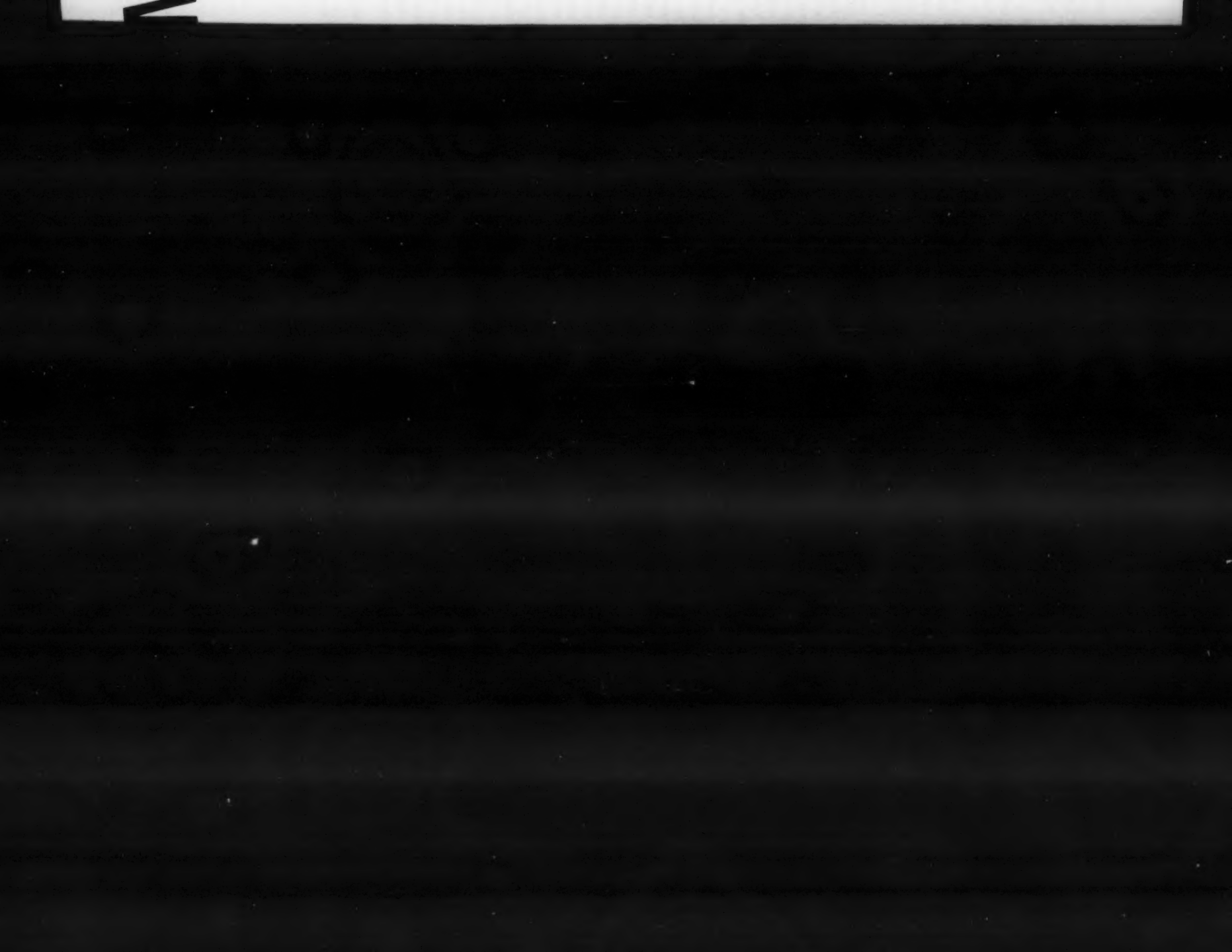
That night you're cruising along at the legal speed limit. The highway is clear. You can see well ahead and you come up behind someone who's doing all of 20 mph under your speed. You blink your lights and he promptly moves over to let you pass. Another car is coming. The driver dims his headlights and you respond in kind.

Now you've got it, too. You know what it is and realize that it's contagious.

We hope everyone catches it. For a driver who possesses it has a much better chance to enjoy a long full life than the irate, short-tempered driver who doesn't. It helps people avoid fatal mistakes and, happily, it requires no shots, no pills, no visits to the dispensary.

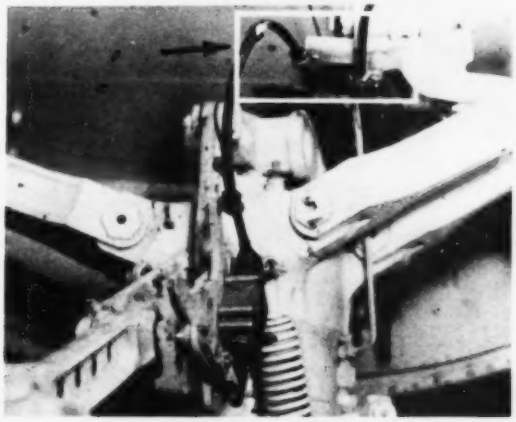
You either have it or you don't. If you do, you'll give it to others. If you don't, here's hoping you catch it.

Courtesy of Air Force DRIVER Magazine

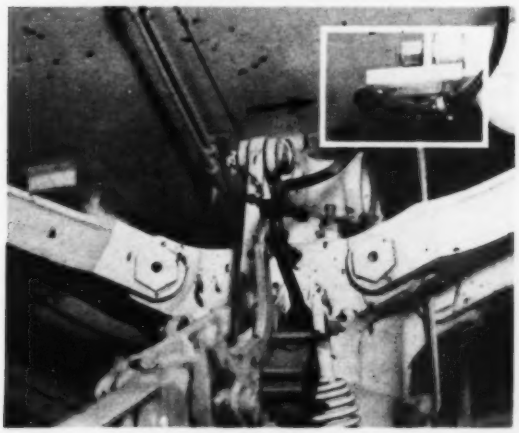


MURPHY'S LAW *

P-3 Wiring Goof



1. Electrical lead almost severed (inset) because of misrouting.



2. Correct routing and clamping eliminates loop in winding.

Same part . . .
Same aircraft . . . Different squadron

THE Dec 1967 issue of APPROACH published the photographs above showing the correct and incorrect routing and clamping of the electrical lead to the MLG down-lock switch. Just a few months ago a P-3B landed with one MLG barberpoled and investigation revealed three wires in the harness assembly of the down-lock switch were broken. *Yep, the same misrouting of the lead existed.* ◄

* If an aircraft part can be installed incorrectly, someone will install it that way!

Letters

Common sense in an uncommon degree is what the world calls wisdom.

Samuel Taylor Coleridge
(1772-1834)

Wife Error

FPO, New York – After reading Jackie Starmer's entertaining article, "Eliminating the Wife Error," in the December issue, I felt I must let you know how much another Navy wife enjoyed it. It should be required reading for all Navy wives.

Mrs. Robert A. Allwine
Box 84, U.S. NavActs, U.K.

● Being in the safety business, we have learned that it is hazardous to disagree with Navy wives. You know, neck bites . . .

Floating Parachutes?

Orange Park, Fla. – After reading in your magazine for the umpteenth time about an aviator being dragged underwater by his sinking parachute, a thought occurred to me. Has there ever been any work or experimenting done on parachutes to make them float or, at least, not get water-logged as quickly?

I'd also like to comment on your December issue. Not only was the material excellent but the cover was outstanding.

LTJG T. W. Gizesky

● We understand that a number of years ago some work was done on the question of parachute flotation but that the experimental product created a bulkier, heavier parachute than was feasible for flight operations. At the present time an automatic canopy release device is considered the answer, an idea which the Naval Safety Center endorses. The Naval Aerospace Recovery Facility at El Centro is currently slated to conduct an evaluation of a limited quantity of automatic releases.

SH-3 Stowage Problem

NAS Imperial Beach, Calif. – We've been concerned for some time about the problem of stowage of loose gear such as engine protection covers, blade straps, blade boots and nose covers used on the SH-3D. We think these articles ought to be removed from the aircraft when it is launched on a local hop. Why? It makes working in the aft station on SAR and utility flights difficult for the aircrewmen. Also, in a ditching situation various items could be deadly missiles or could block escape hatches.

Two AWH Mouses

● We share your concern about loose gear in any aircraft. It is dangerous and should not be permitted. One fix which has been relayed to us is that HS-2 originated the idea of securing a bag, strapped to the deck on the port side forward of the heat barrier under the passenger seat, equipped with a drawstring into which the items you mentioned are safely stowed. Any other of you SH-3 operators have a different method?

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request.

Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, Va. 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

Black Air and the Boat Letter

New Orleans, La. – As a Naval Reserve pilot whose civilian job is administering a helicopter flight operation serving offshore oil facilities in the Gulf of Mexico, I was very interested in your article, "Black Air and the Boat." At the present time we use single-engine aircraft and do not fly at night except in cases of extreme emergency. We hope to soon have a twin-engine helicopter small enough to fit our somewhat restricted offshore heliports. Night flying, however, still poses a problem in that the FAA-required instrumentation and stabilization equipment is not available at a cost which would make it economically practical. FAA instrument certification for our new bird still appears to be many months away and consequently we are hopeful of demonstrating night capability under VFR conditions before instrument certification is obtained.

Black air is the same whether it surrounds a moving aircraft carrier or a stationary drilling rig and lack of a horizon, which is the condition existing more often than not, is the big culprit. The searchlight approach is a unique proposal and, besides being a possible solution to our night problems, would always be an added safety factor regardless of equipment capability. I intend to pursue the application of light beams to flight operations in the offshore oil patch and if it isn't practical for APPROACH to send technical data direct, it will certainly be appreciated if the development of this concept is thoroughly covered in the pages of your magazine. If you wish to publish this letter, please include my address so interested parties can write.

LCDR Richard H. Moore, USNR-R
c/o Shell Oil Company
P.O. Box 60193
New Orleans, La. 70160

Black Air and the Boat Letters (Continued)

NAS Key West, Fla. – After reading your article, "Black Air and the Boat," I was compelled to write to you using my limited experience and experimentation with stage lighting. I am not a pilot, however, I am presently an SH-3A/D crewman (I was previously an S-2F crewman). I have not made any landings at aircraft controls but have ridden the "back seat" many times to arrested landings, bolters and cat shots and just listened to the pilots complain about the poor lighting situations on carriers.

I agree completely with LCDR M. Z. Haggard as to the position and type of lights that should be used. However, as he stated, carbon arc lights nearly always require personnel standing by anytime they are fired up. Also, they are expensive to maintain and very bulky.

In the smaller theaters (such as high school and college stages), carbon arcs are not used for two reasons: (1) expense and (2) they are too cumbersome to handle. My suggestion is to use lekoes. This is a type of spotlight that is in a fixed position about halfway out in the audience. They provide a very high intensity light beam (which can be varied in size) for a long distance. They use a standard high intensity bulb and could be remotely controlled by Pri-Fly through a rheostat control and/or on-off switches. Once in position the lekoes require minimal adjustments and bulb changes. The biggest problem is cooling. If they are mounted on the exterior of the ship with a weather shield, there would be more than sufficient cooling.

The lekoes are so constructed that a colored lens can be placed in front of them. Possible color codes for LCDR Haggard's idea would be: White horizon lights, green bolter *highway* and yellow catapult *highway*. The vertical beam could have many different colored lens for signaling, a shutter for signaling or just white as a reference beam.

Along the same lines is round-down lighting. If the round-down were lighted, this would also give a visual reference as a "horizon" from a distance but could be pointed and capped so as not to be seen at distances less than one-half mile from the ship unless the pilot is below the glide path. It would be an aid to stopping ramp strikes and short landings in conjunction with the meatball.

AW1 (AC) Paul Williamson, USN
HS-1,NAS Key West, Fla.

● We're happy to print these interesting comments. Readers who desire to discuss the matter further may forward letters to APPROACH or correspond directly with the letter writers.

Squadron Drug Program

An information program on the hazards of drug use set up by TRARON-21 at NAS Kingsville may be the first of its kind in the Navy.

The broad objective of this program is to prevent men from using drugs in the first place. However, if a man is experimenting with drugs or thinking about using them, the program makes individual and confidential counseling available. A chief warrant officer and eight senior enlisted men in the squadron, chosen for their honesty, integrity and the high regard which their squadron mates have for them, were selected to be counselors.

No one seeking aid need fear legal action since the program is being conducted completely apart from the squadron's legal department.

TRARON-21's training officer and the author of the drug counseling program is CDR William C. Burke, USN.

It Only Hurt for a Little While

NAS North Island – The plane captain who was wearing this safety shoe says, "It only hurt for a little while and I still have all my toes!" He was closing the doors of VS-33's hangar when he was distracted and a door caught his foot. Loss of several toes would have certainly been the result had it not been for his safety shoes. As it was, only a slight bruise was sustained.

LCDR P. A. Ruth, USN
Aviation Safety Officer

Vol. 15 **approach** No. 11

RADM Roger W. Mehle

Commander, Naval Safety Center

Our product is safety, our process is education and our profit is measured in the preservation of lives and equipment and increased mission readiness.

Contents

Departments

Credits

This month's cover by staff artist Blake Rader depicts a rescue by the Navy's own Old Reliable, The Grumman HU-16 *Albatross*. **Pg 22** Painting by Robert Trotter, Courtesy the Garden Gallery of The Norfolk Museum of Arts and Sciences. **Pg 40-41** Diagrams by Don Lips. **OBC** Cartoons by Ballow, Courtesy General Dynamics.

NavWeps 00-75-510

Next Month

MOVLAS

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

CERTIFICATE OF COMMENDATION

TO

U.S. Naval Safety Center

WHOSE PERSONNEL HAVE EXHIBITED PROFESSIONAL COMPETENCE, RESOURCEFULNESS, SUSTAINING INTEREST AND LEADERSHIP IN AVIATION SAFETY -- ESPECIALLY IN THE AREAS OF AIRCRAFT ACCIDENT INVESTIGATION AND SAFETY EDUCATION -- AND HAVE THUS RENDERED GREAT SERVICE TO THE ENTIRE AVIATION COMMUNITY.

JANUARY 1970
WASHINGTON, D. C.

ADMINISTRATOR

THE above Certificate of Commendation was presented to the Naval Safety Center by the Federal Aviation Administration. Mr. Ferris T. Howland, Deputy Director of Air Traffic Service, presented the award to RADM Roger W. Mehle, Commander, Naval Safety Center, at a luncheon on 25 February 1970.

The design must preclude jamming by tools or debris.

The German Aviatik C.2 dived into the ground, apparently the victim of a French Voisin bomber in the first dogfight in history. The date: 5 January 1915.

However, after careful examination, accident investigator Oberlieutnant Oglefrau found the crash to be caused by the German pilot's collection of French postcards which fell into and jammed a small pulley.

His report read: "Der brunets vas nice, but der blonde... Cheewowee!"